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ABSTRACT

Significant social, demographic, and economic changes have occurred in the North Central states since 1960. This document examines structural and policy variables related to distribution of income, during the years 1960-80 in the 397 counties defined as agriculture-dependent in 13 North Central states. Personal income distribution has been explained by four types of theories: stochastic, personal characteristic, regional endowment, and development. These theories were integrated into a single working model for empirical analysis. A regression model was developed that included five structural variables and five policy variables. Correlation coefficients were calculated to determine the degree to which variables were related to income distribution (Gini-ratio) in 1960, 1970, and 1980. The relative influence of county structural endowments and social and economic policies on income inequalities differed in each census year, shifting from policy variables as most influential in 1960 to structural variables as slightly more influential in 1980. Income distribution was related to retirement benefits and education levels (see pages 37-42) in all three census years; and to unemployment benefits, county government expenditures, proportion of commercial farms, and manufacturing employment in two out of three years. This report contains 70 references and 21 data tables and graphs. (SV)

Distribution of Personal Income in Agriculture-dependent Counties of Midwestern States:

A Policy Variables Approach

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DISTRIBUTION OF PERSONAL INCOME IN AGRICULTURE-DEPENDENT COUNTIES OF MIDWESTERN STATES: A POLICY VARIABLES APPROACH

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CHAPTER ONE

INCOME DISTRIBUTION POLICY

Social and Economic Change in Rural America

Significant social, demographic and economic changes have occurred in the North Central region of the United States since 1960. As patterns of population growth shifted in favor of rural areas (Long and DeAre 1982), residential growth in nonmetropolitan counties outpaced that in metropolitan areas by more than three to one (8.7 percent and 2.6 percent, respectively) (Adamchak et al. 1985). The most notable aspect of this reversal was that the largest population gains were recorded in unincorporated rural areas.

The income gap between persons living in urban and rural areas of the U.S. is noticeably high. In 1980, the median income of urban American families was $20,653, while the median income of families in rural America was $17,995, a difference of $2,658 (Bureau of the Census 1983). Economic growth in nonmetropolitan areas of the North Central region surpassed that of the region's metropolitan centers. Nonfarm wage and salary employment in nonmetropolitan counties increased by 2.0 percent between 1973 and 1979, while the comparable rate in metropolitan counties was 1.7 percent (Bluestone 1982). Interestingly, the highest rates of increased employment occurred in metropolitan fringe counties, in less-urbanized counties not adjacent to metropolitan centers, and in totally rural counties adjacent to metropolitan centers.

Structural changes accompanied these residential and employment shifts. For example, women entered the labor force in record numbers during the 1970s. Less than 41 percent of all women over age 15 were in the labor force at the beginning of the decade. However, by 1980, more than one-half had joined the labor force (Bureau of the Census 1983).

Farm size continued to increase during the 1960 to 1980 period, reflecting the process of structural change in agriculture. As farm structure changed, farm family and household income distribution also changed. Net nonfarm income (as a percent of net, before-tax earnings reported by farmers) varied considerably by size, type and location of the farm unit. A substantial proportion of income reported by farm recipients was derived from off-farm sources. Government farm program payments and numerous other factors affected farm income distribution during the period. A study conducted by the U.S. Department of Agriculture indicated that a substantial percentage of benefits went to larger farms (Reinsel et al. 1987).

These general indicators of change in rural and urban areas of the region provide useful information to policymakers at the local, state and national levels. They do not, however, provide information on how the benefits of economic growth were distributed among socioeconomic groups (urban, rural farm, and rural nonfarm families and households) or within socioeconomic groups. Furthermore, these general indicators do not provide information on how policies and programs redistribute the benefits over time. Following is a description of some of the historic and contemporary social and economic policies that have been intended to have an impact on income levels of select groups of Americans.

Income-Enhancement Policies

Since the 1930s, numerous pieces of legislation have been enacted to enhance the livelihoods of rural residents. This legislation is divided into the areas of social insurance, welfare programs, and employment and training programs.

The Social Security Act of 1935 was one of the first **social insurance** programs in this country. The act was initially targeted for elderly workers who might not otherwise have had sufficient retirement income. The act was later amended to include the survivors of elderly workers (1939) and the disabled (1956). Medical coverage for hospital and physician reimbursement for those aged 65 and over was added to these social insurance programs in 1965 in the form of Medicare. Legislation revising the benefits, coverage and target audience of social insurance has been passed periodically.

Legislation affecting **welfare programs** is a second income-enhancement policy. Major components of this legislation can be traced to the days of the Great Depression. As part of the Social Security Act of 1935, Aid to Dependent Children (ADC) was initiated. During the 1960s, additional welfare programs were created as part of the federal "war on poverty." Aid to Families with Dependent Children (AFDC) resulted from the Public Welfare Amendment of 1962. This amendment provides for rehabilitation, services and income for parents or relatives caring for a child. While many of the social insurance programs were targeted largely toward the elderly poor, ADC and AFDC were targeted toward the younger poor.

Under the title programs of the 1965 Social Security Act, Medicaid was made available to participants of AFDC programs. The state and federal funds used in this program were intended to provide medical payment assistance to the poor. Additionally, food stamp programs for those at or below the poverty level were instituted by the Food Stamp Act of 1964 under the auspices of the Federal Surplus Commodities Corporation.

Income-enhancement legislation continued to be enacted during the decade of the 1970s. Women, Infants and Children (WIC) programs were initiated in 1973. The following year, Supplementary Security Income (SSI) combined and federalized three programs that were originally components of the 1935 Social Security Act: Old Age Assistance, Aid to the Blind, and Aid to the Permanently and Totally Disabled. Additionally, low-income energy assistance programs were initiated in 1975. Thus, welfare programs and policies started during the 1960s that were intended to enhance the incomes of the poor and the elderly, were continued through the 1970s. In addition, programs were either added or enhanced to assist women, children and the disabled.

Whereas social insurance and welfare programs were established to enhance incomes directly through monetary or food assistance, **employment and training programs** offered educational assistance. The Fair Labor Standards Act (FLSA) of 1938 set minimum wages for certain groups of workers. Between the 1938 FLSA and the 1960s "war on poverty" legislation, very few employment and training programs were initiated. Three key programs were started during the early 1960s: the Manpower Development and Training Act of 1962, the Job Corps of 1964, and the Neighborhood Youth Corps of 1964. Two additional key enactments of the 1970s included the Comprehensive Employment and Training Act (CETA) of 1974 and the Public Service Employment Program of 1974.

Billions of dollars have been spent on various social insurance, welfare, and employment and training programs since their inceptions. However, relatively little is known about how the infusion of this money into the economy has affected the overall distribution of income. Which policies and programs are most effective in the distribution of income? Further, by what means does the redistribution take place?

Agricultural Policies

Along with income-enhancement policies, the impact of agricultural policies on income distribution must be analyzed because of the role that agriculture plays in these areas. Surpluses of agricultural products have kept the prices of these products low, thus keeping farmers' incomes low. Throughout the past half century various policies served as experiments to determine their impact on farm income by adjusting the surplus supply of agricultural production either through voluntary or mandatory production controls or by stimulating foreign demand. Following is a brief summary of five of these experimental programs.

The Depression of the early 1930s brought to the nation's awareness the plight of the poor in rural areas. As a result, the Agricultural Adjustment Act of 1933 was enacted to enhance farm income by reducing crop acreage through voluntary production limitation agreements. It was believed that voluntary acreage reductions would occur if farm operators were assured of receiving a profitable price for their commodities. Parity levels were set to provide farmers with purchasing power equivalent to what existed during the prosperous period of 1900 to 1914.

Other acts followed shortly thereafter with the objective of improving both the income and quality of life in rural America. The Emergency Farm Mortgage Act and the Farm Credit Act of 1933 established emergency and long-term credit programs to assist farmers. The Soil Conservation Act of 1935 and the Soil Conservation and Domestic Allotment Act of 1936 sought to reduce production of surplus crops by paying farmers for improved land use and for conservation practices.

The Agricultural Adjustment Act of 1938, the basis of today's agricultural price support and adjustment laws, maintained the voluntary conservation and acreage allotments of earlier legislation. However, the act made marketing quotas for *basic* crops mandatory. Attempts were made to reduce agricultural product surpluses by stimulating foreign trade. A decade later, the Commodity Credit Corporation (CCC) Charter Act of 1948 made nonrecourse loans available. That is, producers were able to obtain loans from the federal government using the grain they produced as collateral.

The Agricultural Trade Development and Assistance Act of 1954 (PL 480) allowed the government to make agreements for sale of farm products for foreign currency, to make shipments for emergency relief and other aid, and to barter farm products owned by the government for needed materials. The objective of the act was to stimulate foreign trade of agricultural products, and was extended into the 1980s.

The Agricultural Act of 1956 increased mandatory marketing quotas or allotments and established the Soil Bank, the first voluntary land retirement program. Acreage reserves and conservation reserves were developed. Acreage reserves aimed at short-term withdrawal of land from production, whereas conservation reserves withdrew land from production for up to 10 years. This program proved to be very costly to the federal government.

With the goal of improving income for the average farmer, much of the agricultural legislation in the 1930s, 1940s and 1950s made conservation and acreage allotments voluntary, but made production-control marketing quotas for "basic" crops mandatory. Quotas were not the amount of produce farmers were allowed to market. Rather, they were the number of acres farmers were allowed to plant in order to produce a given amount of commodities. Farmers were offered inducements to voluntarily reduce their acreage. Some of these inducements included access to nonrecourse loans, and cash and in-kind payments at a percentage of parity (Rasmussen 1985; Bowers 1987).

Despite these programs, surpluses of agricultural products mounted through the 1950s and the government's expense grew. Controls placed on certain commodities led to overproduction of uncontrolled commodities. Decreases in acreage allotments were accompanied by an increase in farming intensity--heavier use of fertilizers, pesticides, machinery and better varieties of seeds. This, in turn, led to increased production. Meanwhile, demand for American farm commodities did not improve enough to compensate for this increased production despite increased exports under the PL 480 programs.

As a result of excess production and lower price supports, farmers received lower prices for their products during the 1950s. Additionally, federal outlays for farm programs grew. Total federal expenditures for farm price and income programs ranged from $1.7 billion in 1950 to $2.9 billion in 1959 (*Budget of the United States Government, FY 1952-1987*).

A major shift occurred in American agricultural policy in the early 1960s, resulting in a second agriculture policy era that lasted from 1964 to 1973. Under the 1961 Food and Agriculture Act, farmers were offered a proposal to switch from acreage controls to true quotas on the amount of produce that they could market. They were to receive higher price supports in return for reducing their production. The proposal was expected to raise farm income and, at the same time, reduce government storage costs. During the 1963 referendum, farmers soundly defeated the proposal, bringing an end to an era of mandatory controls and ushering in an era of voluntary production and acreage reduction programs. Voluntary diversion continued with the Food and Agricultural Act of 1965. This act differentiated between the income-enhancement features of farm programs for basic crops and stability-enhancement features.

The agricultural policies implemented during this time period were of minimal success in reducing acreage and total supply of agricultural products. They were even less successful in reducing costs to the federal government. A decrease in acreage allotments was met by an increase in the intensity of farming, and thus, an increase in total production. Federal outlays for farm price and income programs grew from $3.3 billion in 1964 to $3.7 billion in 1973 (*Budget of the United States Government, FY 1952-1987*).

The types of policies and programs enacted during this era continued to play a role in farm income well beyond 1973. However, international events had an even more significant impact on farmers' incomes and resulted in a third agriculture policy era that lasted from 1973 through 1976. American farm products reached high demand starting in 1973 as a result of world crop shortages and a worldwide inflation. Because of world demand (exemplified by the historic purchases of American grain by the Russians), export subsidies, and the devaluation of the dollar, stocks of American grain declined. The result was an increase in the market price farmers received for their produce. By 1976, however, farm prices began to sag as production exceeded demand, ending the 1974 to 1976 period of relative prosperity.

While much of the pre-1973 legislation emphasized reducing agricultural production, the Agriculture and Consumer Act of 1973 emphasized increasing production to respond to the growing demand for U.S. farm products. Farmers were assured of target prices through **deficiency payments**, or direct payments on crops made when target prices were higher than loan rates or market prices. Loan rates were set below market prices to move farm products into markets rather than into government storage. Between 1973 and 1977 target prices were generally lower than market prices. Fueled by inflation, the cost of production and the value of land was pushed higher. Farm price and income programs cost the federal government \$1.1 billion, \$.7 billion and \$1.1 billion, in 1974, 1975 and 1976, respectively (*Budget of the United States Government, FY 1952-1987*). Even with inflation, these costs were lower than those of the pre-1964 policy era.

A fourth agriculture policy era, from 1977 to 1981, was marked by a continuation of voluntary production and acreage reduction controls as well as by high inflation. Although prices were relatively high, land values and production costs were also high.

Because of all-out production, farm prices were sagging by the time of the Food and Agriculture Act of 1977. This legislation established a farmer-owned reserve program for wheat that allowed farmers to hold their grain for three to five years rather than sell it to government stocks. Target prices and loan rates were increased, and cost-of-production figures were used to escalate target prices. In addition, historic acreage allotments were replaced with set-aside procedures. These programs cost the federal government \$3.8 billion in 1977, \$5.7 billion in 1978, \$3.6 billion in 1979, and 2.8 billion in 1980 (*Budget of the United States Government, FY 1952-1987*).

The enactment of the 1981 Agriculture and Food Act served as the beginning of the fifth agriculture policy era. The Agriculture and Food Act of 1981 continued voluntary control policies established through the 1970s. The Reagan administration's goals for agriculture policy and programs were to give them a market orientation, simplify their operation, and reduce their costs to the federal government.

Between 1981 and 1984, agricultural exports fell, depressing prices and raising government costs. As a result, surpluses accumulated and price support costs were driven higher. Farmers continued their high levels of production under the voluntary programs, increasing government-held surpluses and government costs. To counter this problem, the U.S.D.A.'s payment-in-kind (PIK) program was established to offer surplus agricultural commodities owned by the government for agreements to reduce production by cutting crop acreage. The objective was to simultaneously reduce both production and government surpluses and to increase farm income.

The Food Security Act of 1985 set marketing quotas, loan rates, target prices, deficiency payments and acreage limitations. In addition, it provided for "sodbuster" and "swampbuster" programs, conservation reserve programs, and the dairy herd buy out program. Federal expenditures for farm price and income programs escalated from $4.0 billion in 1981 to more than $19 billion in 1986 (*Budget of the United States Government, FY 1952-1987*). With the decline in land values and market prices and the increase in production costs, this policy period has been called the era of the **farm crisis**.

In each of these five agriculture policy eras, overproduction led to decreased prices for farm commodities. Numerous policy approaches attempted to reduce production. Some of these approaches included voluntary acreage reduction programs, mandatory acreage reduction programs, market quotas of commodities, and long-term conservation reserves. Although each approach had some successes and some failures that had an impact on production and, in turn, the prices paid to producers, we have yet to determine their overall impact on income distribution in agriculturally-dependent areas.

What accounts for the variation in the level and distribution of income found in our nation's rural areas? Which of the policies described above potentially redistribute income? This report attempts to answer these kinds of questions. The primary objective is to investigate the relationship between the distribution of household income in agriculture-dependent counties of the North Central region and selected social, demographic and economic determinants. This investigation will provide insight into the process of income distribution. It will identify the effects of policies that potentially influence income distribution through a detailed analysis of the interrelated system of social and economic change and income distribution.

Chapter 2 reviews the theories offered to explain income distribution. Based on these theories, we derive a model to analyze income distribution in the region's agricultural-dependent counties. The third chapter describes the methods used to study the impact of selected policy and structural variables on income distribution. Chapter 4 describes the findings of the study and includes an analysis of the variables that significantly and consistently impact income distribution across time. The fift chapter is a discussion of structural factors found to determine income distribution, while Chapter 6 discusses policies that determine income distribution. The final two chapters are a summary of this study and suggestions for additional research.

CHAPTER TWO

THEORIES OF PERSONAL INCOME DISTRIBUTION

Various theories have been proposed to explain observed characteristics of personal income distribution.[1] These theories can be logically grouped into four general categories based on their similarities. This section reviews these four categories and illustrates how they may be integrated into a single working model for empirical analysis. They are: stochastic, personal characteristic, regional endowment and development. One characteristic of this literature is clear--there is no single, unified theory of distribution of personal income.

Stochastic Theories

Theories of the stochastic, or theoretic-statistical type (Bjerke 1961), hold that incomes are lognormally distributed and that income levels are random (i.e., due to chance). Stochastic theories relate income distribution to the workings of an indefinite number of small, unidentifiable influences. These theories attempt to show how income distribution is affected primarily by the opportunities people derive from chance events (Jencks 1972). For example, an acquaintance may steer an individual from one line of work to another. Or, a new exit is built on the interstate near one's restaurant.

Stochastic theories of income distribution have been developed largely by British economists over the past several decades. American alternatives have been formulated by Friedman (1953) as part of the "theory of choice under uncertainty," and by Thurow (1975) as the "random walk theory." These theories argue that even if a free-enterprise economy could begin with complete

[1]Most theorists acknowledge that the observed distribution of personal income is skewed. This assumption has been challenged by economists such as Stanley Lebergott (1959). He pointed out that when only males aged 25 through 64 and credit availability are considered, the distribution becomes remarkably normal. Kuznets (1974) concurs that the income distribution for this group shows appreciably narrow inequality. Nevertheless, he also points out that other subgroups, such as family units with youth, old and female heads are increasing rapidly and are concentrated in lower income brackets.

equality in income and wealth, inequalities would be evident within one generation. Friedman, a proponent of the stochastic theory, has sharply criticized other paradigms that focus on determinants of income distribution. His contention as a neoclassicist is that income distribution is entirely market driven and arises from job competition.

Personal Characteristics Theories

A second theoretical orientation used to explain differences in income distribution focuses on personal characteristics, such as differences in individual or family traits. This perspective holds that inequalities are not due to chance or mere market forces as suggested by stochastic theorists. Rather, the distribution of income is rooted in the value society places on various personal traits. Three of the more common approaches in this field include personal ability theories, family background theories and human capital theories.

Personal Ability Theories

Ability, usually measured as Intelligence Quotient (IQ), is commonly cited as a determinant of earnings. Bowles and Gintis (1973), however, have shown that the independent influence of IQ on earnings is fairly small. When education and social class are held constant, a person in the higher IQ categories stands only a slightly higher chance of increased earnings than does the person with an average IQ. The relationship between IQ and economic success is likely derived from the common relationship of these two variables with family background and level of education.

Family Background and Life Cycle Theories

Bowles (1972) found that, when taken together, both years of education and socioeconomic status based on family background had a significant effect on level of earnings. Socioeconomic background was positively related to earnings only through its relationship with educational level. Similarly, years of education had a relatively minor influence on earnings independent of social background. A shortcoming of Bowles' work was his exclusion of various human capital variables. As a result, his conclusions have not been universally accepted.

One variation of family background theory is the life cycle theory. Research in both the U.S. (Kuznets 1953; Blinder 1974) and Great Britain (Prest and Stark 1967; Polandyi and Wood 1974) indicate that age, abilities, savings and spending, and work habits account for the bulk of income distribution. Each of these variables is affected by the stage of life in which workers find themselves. Thus, earning inequalities measured at any point in time may be overstated. According to life cycle theorists, a life cycle income rather than a point-in-time income would more accurately measure income inequalities.

Human Capital Theories

Human capital theorists contend that expected lifetime incomes rise as individuals invest in themselves. The more marketable and competitive they become, the greater their lifetime earnings increase. For example, individuals with advanced education and training are often in better positions to compete for higher paying jobs (Chiswick 1974).

An individual's investment is rewarded over the future period of employment in the form of higher earnings. In a short-run conceptual context, human capital investment translates into an upward shift of the individual's marginal value product of labor and a correspondingly higher return on the investment in education. This implies an increase in income for those who invest in human capital.

While numerous research efforts have been devoted to testing human capital theories, Becker's (1967) work is especially noteworthy. He maintains that personal income is primarily a function of an individual's "learning, skills,. . . acquired through belonging to a particular family and culture" (Becker and Tomes 1979: 1158). Unfortunately, the impacts of education on income distribution are not yet clearly understood. Stiglitz (1975) argues that education serves as a device to "screen" individuals with respect to their employment assets. Thus, it may not be the added knowledge base education supplies to individuals, but rather the adaptability and flexibility it instills.

Individuals may make other investments to increase their earning abilities. Some of these include migration (Sjaastad 1962), health (Grossman 1972), on-the-job training (Mincer 1962), job search (Spence 1974), information evaluation (Stigler 1962), preschool investment in one's children (Leibowitz 1977), and family (Nerlove 1974).

Human capital theories of the Chicago School are often counterposed against the inheritance theories of the Cambridge School (e.g. Sahota 1978). Unfortunately, such comparisons often confuse current income with total wealth. Thurow (1975) distinguishes between income and wealth by calling for a "random-walk" theory to account for inherited wealth and a "job-competition" theory to account for earnings and income. Atkinson (1975) observes that wealth is a function of saved earnings plus the accumulation of all income from capital, including capital gains.

In his critique of human capital theories, Lydall (1976) lists five implicit assumptions made by human capital theorists. First, everyone has equal ability. Second, labor, education and capital markets are perfect and always in equilibrium, both instantaneously and over time. Third, people have perfect knowledge of the future and make fully rational decisions. Fourth, there is no on-the-job training, no learning-by-doing, and no effect of age on ability. Finally, there are no "hierarchy" effects on earnings. He notes that human capital theories explain the level of earnings by people with different levels of education rather than the distribution of these earnings because it does not explain why some people invest more in themselves than other people do.

Personal Characteristic Theories in Perspective

In an analysis of the effects of variables ranging from ability to education, family background and employment status, Taubman (1976) found that nearly all variables change during a person's life cycle. When other variables are held constant, education leads to significant differences in earnings. Nevertheless, these differences are small in comparison to those that rise from a conglomeration of family background, attitudes and nonpecuniary preferences, and are no larger than those due to ability.

Atkinson (1975) illustrated the relationship among the various personal characteristics theories of ability theory, family background theory and human capital theory (Figure 1). According to Atkinson, measured childhood IQ is a function of genotypic IQ, whereas years of schooling is a function of one's family socioeconomic background. As a result, earnings is a function of measured childhood IQ, years of schooling, family socioeconomic background and chance. Lydall (1976) devised a model similar to Atkinson's. Lydall's model added the psychological "D-factor" (drive, dynamism, determination, energy, industry and self-discipline), occupation, and age (a proxy for experience and on-the-job training).

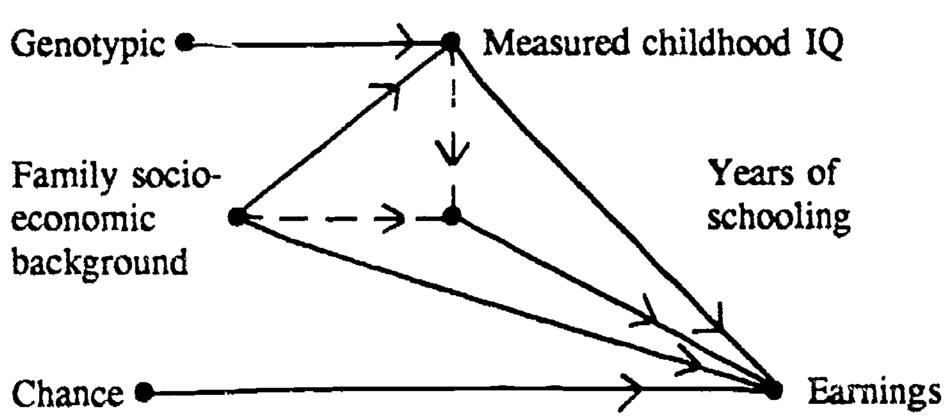

Figure 1. Atkinson's explanation of earnings.

Regional Endowment Theories

A third general category of theories pertaining to income distribution are endowment theories. These theories center on a regional as opposed to an individual unit of analysis. As a result, the data are usually aggregate statistics that encompass a specified geographic unit such as a city, township, county or state. The basic premise of the endowment perspective is that geographic areas differ in the characteristics and attributes that directly affect income distributions. The three most prominent approaches include the urban-industrial impact hypothesis, economic base theories and ecological theories.

Urban-industrial Impact Hypothesis

The urban-industrial impact hypothesis suggests that the presence of an urban center, industrial and retail trade employment, and availability of services is positively related to rural residents' incomes. T. W. Schultz (1951; 1953) observed that farm incomes and productivity are highest near centers of urban-industrial development. He suggested that land and labor costs rise as a result of being geographically close to a city. This, in turn, induces farmers to mechanize, increasing their labor productivity. Competition for excess labor from rural areas is found in the cities and farm products receiving a higher price in the cities make a capital investment in farming more profitable.

In addition, Schultz found that cities are able to open new job opportunities to absorb a larger number of people. Because of the education and training levels required by these new urban jobs, the level of education in urban centers is raised. Furthermore, urban living breaks down traditional, ascriptive components of rural migrants, which increases their potential for social mobility.

Tauriainen and Young (1976) sought to determine the impact of a set of urban-industrial variables on income and productivity of agricultural workers. Using Finnish communes in their analysis, Tauriainen and Young found general support for Schultz's hypothesis. They concluded that his hypothesis may be more useful on a regional rather than local level and that measures sensitive to urban aspects of central places should be included in future analyses rather than including only industrial development aspects.

Economic Base Theories

Economic base theories suggest that any activities serving to bring money into a community may be said to represent that community's economic base (Henry, Drabenstott and Gibson 1986). These theories are founded on the notion that growth is the preeminent aspect of an economic system's health. They believe that shocks, stimuli or influxes to the economic system will have repercussions on the economy. Money brought into the community will be recirculated as goods and services are bought and sold, creating a multiplier effect. Various industries have differing multipliers; that is, each category of industry has a different ability to bring new money into a community and to have that money recirculated. An input-output (I-O) matrix is frequently used to display the multipliers.

One variation of this type of theory is the sectoral or dual-economy theory. This theory argues that labor markets are neither homogeneous nor fully competitive because many workers are confined to the peripheral sector of the economy. In the peripheral sector, firms are small, have lower market power and lower profits. As a result, this sector is unable to pay moderate wages compared with core or monopoly firms. This theory has received support from a number of researchers such as Jacobs (1982). He notes that states with a greater proportion of the work force in small establishments are likely to have a comparatively unequal income distribution.

Ecological Theories

Wilkinson (1973) describes the course of adaptation to ecological change. He theorizes that population growth and environmental change produce ecological disequilibrium that leads to resource scarcity. At this point, two alternatives are available. The first involves a breakdown in local self-sufficiency, forcing imports to cover deficiencies and specialized production for exports. The second alternative is to change to new resources or to more intensive methods to exploit current resources. If the latter alternative is chosen, productive processes are involved. The result is a need for more tools and equipment for increasingly complex tasks, the application of additional energy for productive processes, and an increased emphasis on labor saving methods (which may include additional division of labor). The impact of ecological variables on income distribution remains to be tested.

Regional endowment theories appear to address most directly the issue of differentials in the level of income across regional or state units. However, in their current form these theories do not explicitly attempt to relate endowment differentials to observed differences in income distribution across regions. To the extent that the level and distribution of income are interrelated, regional endowment theories potentially add to a composite theory of income distribution.

Development Theories

A final category of theories focusing on income distributions are the development theories. In general, development theories address socioeconomic change. They are grounded on the assumption that alterations in social structures allow institutions and organizations to cope better with the environment, thereby enhancing the opportunity to reach desired goals. Development theories imply change and dynamics.

A number of development theories have been offered that deal with the impacts of various interventions on income distribution. Two examples are neoclassical economic development theories and income-employment growth theories.

It should be noted that the terms "economic development" and "economic growth" are not synonymous, although they are similar concepts and imply processes that result in similar observed outcomes, such as higher incomes. Each region has varying quantities and qualities of natural resources, labor, private and public capital, institutions, technology, and innovation. Economic development alters the mix or combination of these basic factors and changes their quality and, hence, their productivity.

Economic growth, on the other hand, results from an increase in scale and not necessarily a change in the mix of the basic factors. Economic growth is the process of advancing aggregate productivity by expanding the resource base. The difference in these two concepts is best illustrated by Edwards and Coltrane, who stated, "discovering natural resources, inventing techniques, changing the input mix, creating products, innovating organizational arrangements, and tapping markets are associated more with new ways of doing things than with expanding the volume of things done, more with development than with growth" (1972:230).

Neoclassical Economic Development Theories

Depressed areas are frequently characterized by job scarcity and low wage rates. Opposite characteristics may be found in prosperous areas. According to neoclassical economic theories, two areas grow more similar over time as labor migrates from a depressed area to a prosperous area, and as capital moves from a prosperous area to a depressed area. Unfortunately, in some instances, labor and capital both move out of a depressed area. The quality of capital and labor that are sufficiently mobile is of critical concern to the distribution of income.

To improve wage rates in a depressed area, capital resources must be increased and unemployment reduced. This may be accomplished by improving human capital (through education) or by expanding material capital (through infusion of private and public capital and use of local natural resources). Neoclassical theories, or marginal revenue product theories (Gordon 1972; Bluestone et al. 1973), have been criticized by the sectoral theorists for failing to account for the heterogeneity in the labor market and the confinement of many workers to the peripheral sector in the economy (Jacobs 1982).

Tweeten and Brinkman (1976) refer to neoclassical theories as the "resource efficiency" approach because it emphasizes technical training and employment services to fill existing jobs. Advocates of this perspective recommend improving the labor market and subsidizing labor mobility to align private and social costs/benefits.

Income-employment Growth Theories

Income-employment growth theories usually stress aggregate savings, investments, exports, and social/economic engineering. Three illustrations are described by Tweeten and Brinkman (1976). The first one they label the "local community improvement approach." It requires minimum outside assistance and is directed at improving decision-making processes that focus community resources on solving local problems. The major issues it confronts include quality of life, services and housing needs. Unfortunately, this approach does not deal directly with the income distribution issue.

A second strategy is that of "equity and fairness." This approach places emphasis on state and federal aid and tax reform to bring about programs aimed at redistributing income to the disadvantaged. By organizing the disadvantaged and offering them remedial education and training, those who use this theory hope to overcome discrimination and poverty.

The third technique described by Tweeten and Brinkman is that of "place prosperity." This very popular approach attempts to attract industry and jobs by offering low local wage scales and by improving services. Ironically, development methods aimed at attracting new, urban industries do not always insure higher or more equitable incomes.

Kuznets (1955) suggested that during early periods of industrialization, when nonagricultural populations are relatively small in comparison to the total population, income distribution may be more unequal than that of the agricultural population. That is, a U-shaped relationship exists between level of economic development and income equality. Economic development initially depresses income equality, but later causes it to improve. He notes that rapid urbanization and industrialization are frequently accompanied by an influx of low-income immigrants either from the region's agricultural areas or from abroad.

Both the equity and fairness and place prosperity growth approaches deal with increased growth in the socioeconomic system resulting from change in input quality. Changes are not necessarily expected in the quantity or addition of inputs. It is believed that technical progress results from a blending of scientific knowledge and entrepreneurial innovation, economic flexibility, and mobility. This, however, cannot happen unless the system is appreciably modernized or developed. For development to occur, the social system must be in the process of becoming differentiated and integrated (Spengler 1965).

An Empirical Approach

Not all regions are affected equally during periods of economic change. During times of depression or stagnation, some places experience acute hardship while others appear to enjoy relative prosperity. Numerous economic factors undoubtedly serve as determinants of income distribution. Moreover, these economic factors interact with several social and demographic forces in the processes of economic change and income generation. The previous discussion highlighted the diversity of theories that purport to explain the level and distribution of personal income. As illustrated by that discussion, the theories are varied and often conflicting. Clearly, distribution of income is a complex and dynamic process that deserves much additional theoretical and empirical work. Efforts to develop empirical models that test these separate theories, or attempt to integrate them, have been confronted with significant data problems at several levels of aggregation. Therefore, it is useful to consider how previous empirical studies have been developed.

Gardner (1969) hypothesized "immediate" and "ultimate" determinants of income inequality. Immediate determinants include factors of production and rates of return to these factors, such as population change, net migration, income levels from types of income sources, and earnings type. Ultimate determinants are the factors that influence rates of return and the distribution of factor ownership, such as disequilibrium in the labor force, location, population size, long-term migration trends, and county expenditure patterns. The ultimate determinants include policy-oriented variables. Gardner's empirical analysis involved estimates of a state-level, cross-sectional model using census data. Consistent with a cross-sectional approach, Gardner redefined the income measure as equilibrium (long-run) income with the use of an income-generating function. He found that labor market adjustments influence a reduction in short-run, but not long-run, inequality. Further, Gardner observed that increases in the capital/labor ratio, average level of education, and research/extension were associated with increases in both farm incomes and dispersion of farm incomes.

Thurow (1970) conducted an empirical analysis of both longitudinal and cross-sectional variations in income distribution at the state level. Census income data for households were used to estimate the parameters of the beta distribution. Two beta distribution parameters that capture the "concentrating" impacts of determinants were analyzed in the cross-sectional model. Variables such as race, proportion of families living on farms, labor force participation, level of education, employment, and industrial base were found to be significant determinants of income distribution.

Pederson (1975) developed an empirical analysis of county-level size distribution of census income for rural farm households in Minnesota. The study focused on the variance of the logs of income (as Gardner's study proposed) without the use of an income-generating function, due to limited data available at the county level of analysis. Results of the study indicate that no consistent and uniform set of variables explained variation in income dispersion across counties in cross-section for the years 1950, 1960 and 1970. When census year data were pooled, the distribution of educational attainment, off-farm work, number of earners per family, government payments to farmers, and mobility of labor were found to be significant determinants of income distribution. The pooled model accounted for 44 percent of variation in income dispersion across counties in the state.

Foley (1977) completed an analysis of income inequality in 300 counties utilizing census income and the Gini coefficient as a measure of income distribution. Foley's results indicate that population growth rate, race, median family income, population density, and proportion of the labor force employed in manufacturing, cross-tabulated by type of county, were key determinants of income distribution. Foley's estimated model accounted for 50 percent of the variation in income inequality across counties. Additionally, when considering various categories of counties, the model accounted for 72 percent of income inequality in standard metropolitan statistical area (SMSA) counties and 58 percent in rural counties.

A synthesis of the existing theories and previous empirical studies of size distribution of income into a single empirical model is not possible. The alternative strategy employed here is to specify a reduced model that draws selectively on the findings of previous studies. Thurow and Gardner found structural (resource base/endowment) differences between states to be significant sources of variation in income distribution. Thurow, Gardner and Foley found that socioeconomic policy factors were also significant determinants of income distribution at the state and county levels.

Resource endowment variables indicate how characteristics of income recipient units such as level of resource productivity, distribution of resources between recipient units, and participation and mobility of labor and capital resources serve as determinants of expected income distribution. Various hypotheses may be developed regarding the expected relationships between the distribution of educational attainment, labor force participation rates, wage rates and labor mobility, and the selected measure of income distribution.

Socioeconomic policy variables capture the effects of direct and indirect relationships between two classes of government activity (transfer payments and government expenditures) and measures of income distribution. Government transfer payments of various types result in direct income increases to selected recipient units, and are the basis for potential income redistribution among recipient units. For example, income maintenance and unemployment transfer payments are intended to improve the income position of recipients with lower incomes. To the extent that these programs achieve that fundamental objective, the policy is redistributive toward more equal income distribution.

Government expenditures generate direct and indirect benefits that are potentially redistributive in nature. For example, government expenditures on education influence incomes of recipients during the expenditure period and indirectly the future incomes of those receiving the educational service. Since the latter effect lags the actual expenditures, the indirect redistributive effects of policy variables are not adequately captured in cross-sectional analyses. Gardner's analysis of the relationship between the distribution of long run income and ultimate (policy) determinants provides a more direct test of the significance of policy variables in a cross-sectional study. The analysis reported in this paper captures only the "first-round," direct effects of government activity and policy variables. These effects may or may not indicate that a more equal distribution of income has occurred through transfers or expenditures.

Social and economic policies may have an impact on income distribution in a number of ways. First, they may have a direct effect by injecting money into a local economy. For example, income transfer payments are intended to sustain families at the lower end of the distribution. As a result, income is redistributed. Second, such policies may interact directly with structural endowment variables. Government assistance for education of those in poverty may increase the level of education in an area. This allows recipients to move into better-paying jobs. Redistribution of income results.

How endowment and redistribution variables may relate to income distribution and to each other at a cross-section in time is illustrated in Figure 2. Given the nature of systemic change, single-direction arrows could become two-direction arrows longitudinally.

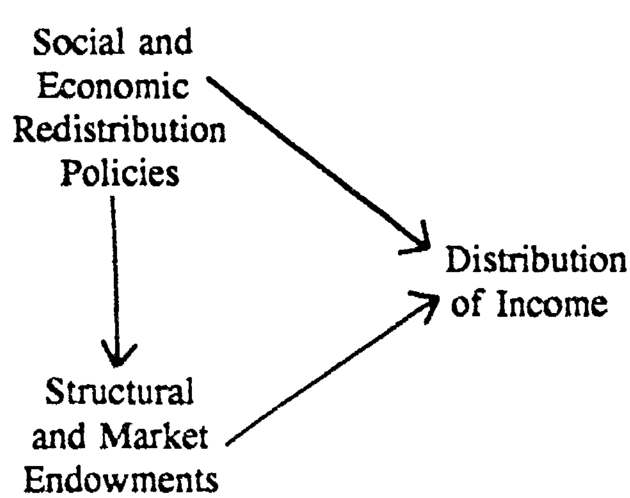

Figure 2. Composite theory of income distribution.

CHAPTER THREE

METHODOLOGY FOR ANALYZING INCOME DISTRIBUTION

Scope of the Study

The project's scope was to determine policy-relevant variables that affect income distribution in those counties primarily dependent on agriculture. Thus, in this analysis, only agriculture-dependent counties were considered. Counties were used as the unit of analysis because they form the smallest jurisdictional base common to most states where structural endowment dynamics and income redistribution policies are most clearly operative.

Only agriculture-dependent counties were selected in order to reduce the range of variables that could be of potential importance in the analysis. This was accomplished by selecting relatively homogeneous counties where agricultural resources and employment potentially played the dominant role in the process of income generation. Bender et al. (1985) and Ross and Green (1985) developed a typology of counties using economic base. They defined "nonmetropolitan agriculture counties" as those counties with 20 percent or more of total labor and proprietor income produced from farming/ranching during 1975 to 1979 (Figure 3). Their definition is used in this analysis.

Only the 13 states in the North Central region of the U.S. have been included. Of the 1,175 counties in these states, 397 (33.8 percent) were defined as agriculture-dependent. All counties included in this analysis are listed by state in Appendix A.

Measure of Income Inequality

The Gini-ratio was selected as the measure of income inequality. It may be illustrated as a ratio of the area between the Lorenz-curve and diagonal divided by the total area under the diagonal (Figure 4).

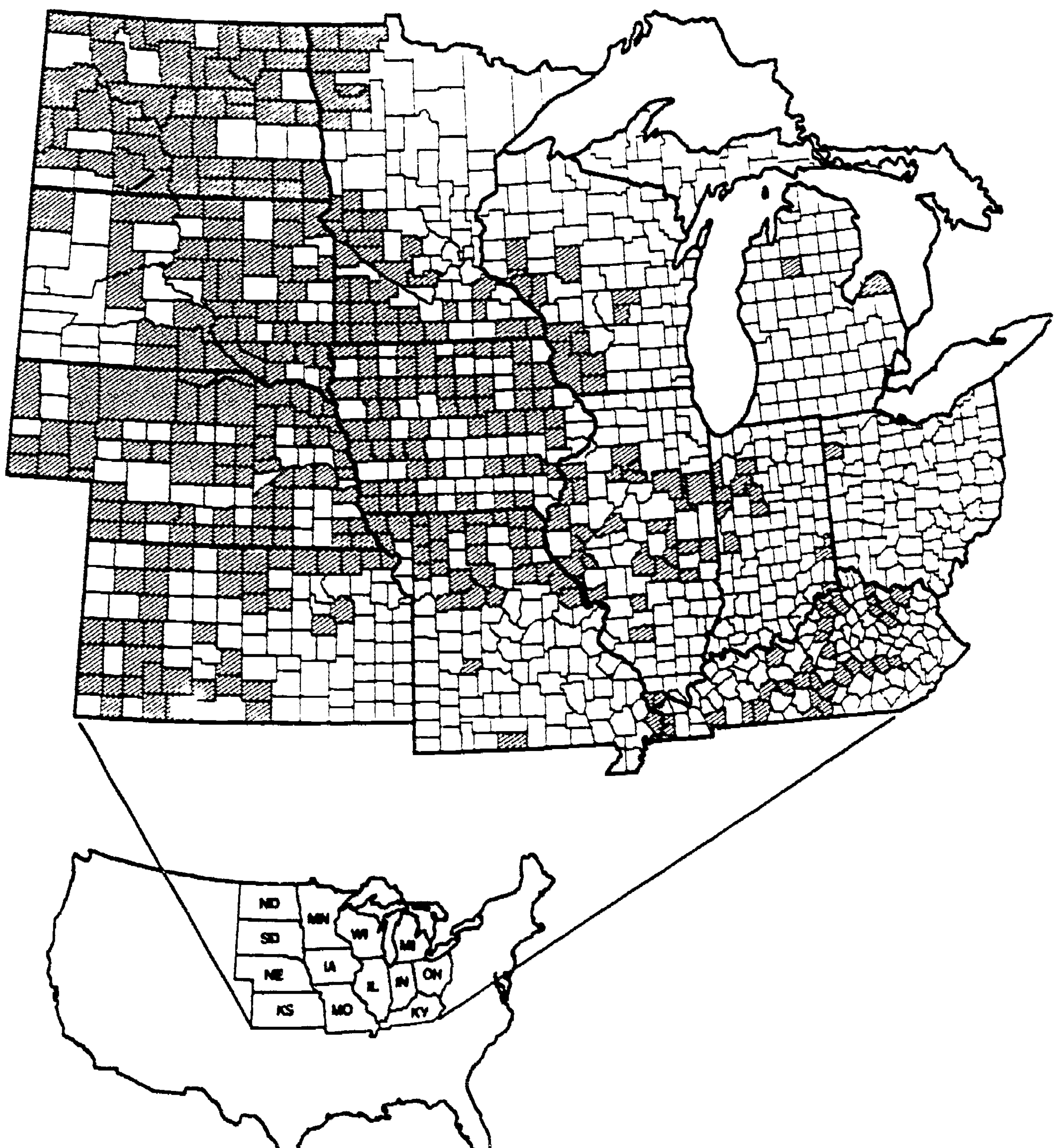

Figure 3. Agriculture-dependent counties in the North Central region (shaded).

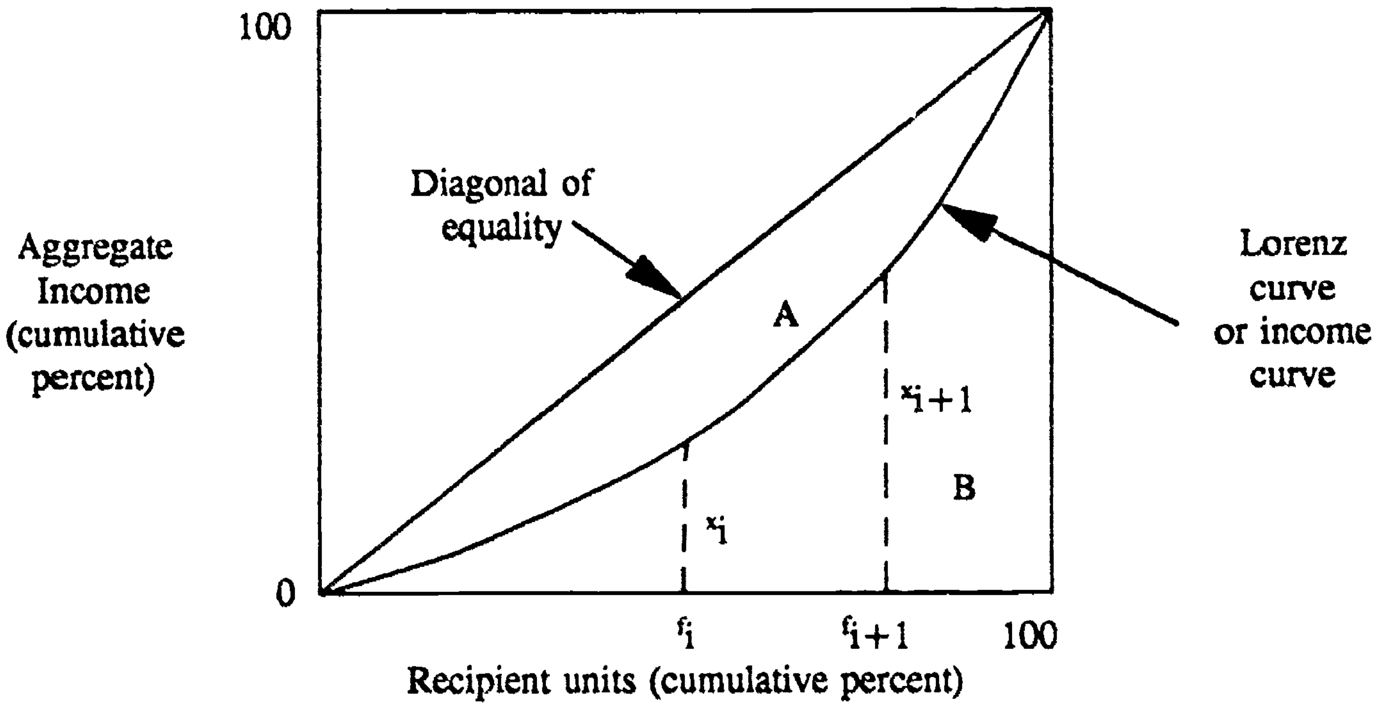

Figure 4. The Lorenz-curve of income concentration.

The Gini-ratio ranges from 0 (when incomes are equal and the cumulative frequency equals the diagonal line) to 1 (at which point all income is received by a single income recipient unit). As a measure of income inequality, the Gini-ratio is computed as:

$$G = \frac{A}{A+B} = \frac{1/2 - \text{Area under the Lorenz-curve}}{1/2}$$

$$G = 1 - 2\,(\text{Area under the Lorenz-curve})$$

Assuming that the curve can be approximated by a collection of straight line segments, the area under any given segment is:

$$(f_{i+1} - f_i) \;*\; \frac{(x_i + x_{i+1})}{2}$$

where f_i is the frequency of observations in the i-th income class and x_i is the midpoint (either arithmetic or geometric) of the i-th income class. The area under the entire curve is:

$$\Sigma\,(f_{i+1} - f_i) \;*\; \frac{(x_i + x_{i+1})}{2}.$$

By substitution, the Gini-ratio is:

$$G = 1 - \Sigma_i\,(f_{i+1} - f_i)\,(x_i + x_{i+1}).$$

Gini-ratios of the counties vary widely from each other and across time. Appendix Table B.1 lists the 1960, 1970 and 1980 Gini-ratios of counties included in the analysis.

Variables Explaining Income Inequality

In this analysis, independent variables were termed "structural variables" and "policy variables." Within the structural grouping were variables that serve either as definitions of development or as key indicators of development (Eberts and Young 1971; Gunther and Ellis 1977).

Structural variables included in the analysis are level of education, manufacturing and services employment, urbanization, proportion of commercial farms, women in the labor force, and political participation. Other structural variables include income from the manufacturing, government, wholesale trade, agriculture, retail trade and service sectors. Additionally, net earnings from dividends, interest and rent were analyzed.

Policy variables include percentage change in population, transfer payments for retirement, income maintenance, unemployment, farm programs and veterans' benefits. Other policy variables include total county government expenditures and county government expenditures for highways, education, welfare and health.

Percentage change in population was very high when correlated with various sources of income, government expenditures and transfer payments. That is, as population increased, incomes, expenditures and transfer payments increased at an almost identical rate. This problem of variables being very highly correlated, or collinear, created difficulties in data analysis. The problem was solved by transforming all aggregate dollar amounts to per capita dollar amounts.

Data

Data for this project were collected from a number of sources. Data on population, income, industry and occupation, demographic characteristics, and geography were provided by the Census of Population and from the City and County Data Book. Bureau of Economic Analysis reports contained data on employment, transfer payments, farms and income. All data were at the county level of aggregation.

Data points used in the research were the census years 1960, 1970 and 1980. Social and demographic variables based on census data were measured for each of these years. Economic variables were measured as of the previous year (1959, 1969 and 1979) to maintain consistency with census data.

Operational definitions for each of these explanatory variables are listed in Table 1. In addition, the hypothesized sign of the relationship between each independent variable and the Gini-ratio is indicated in the right-hand column. These hypotheses are based on a review of research literature pertaining to income distribution.

Table 1. List of Variables and Definitions Included in Analysis

Variable	Definitions	Hypothesized Relationships
Structural Variables		
High School Graduates	Persons age 25 and over having completed a high school degree as a percentage of all persons age 25 and over.	+
Manufacturing Employment	Persons employed in manufacturing as a percentage of all persons in the labor force.	+
Services Employment	Persons employed i services as a percentage of all persons in the labor force.	+
Urban Population	Persons ' ng in places of at least 2,500 residents as a percentage of all persons in the county.	+
Commercial Farms	Dummy variable where: 1 = 40 percent or more of the farms in the county had farm incomes or $40,000 or more in 1980; and 0 = less than 40 percent of the farms in the county had farm incomes of $40,000 or more in 1980. A farm with farm income of $40,000 is defined as a "commercial farm."	-
Women in Labor Force	Women in the labor force as a percentage of all persons in the labor force.	+
Political Participation	Persons voting in presidential election as a percentage of all persons of voting age.	+
Manufacturing Income	Per capita manufacturing income.	+
Government Income	Per capita government income.	+
Wholesale Trade Income	Per capita wholesale trade income.	+
Agriculture Income	Per capita agriculture income.	+
Retail Trade Income	Per capita retail trade income.	+
Services Income	Per capita services industry income.	+
Net Earnings	Per capita net-earnings.	+
Dividends, Interest, Rent	Per capita income from dividends, interest and rent.	-

Table 1, cont. List of Variables and Definitions Included in Analysis

Variable	Definition	Hypothesized Relationship
Policy Variables		
Population Change	Percent change in total county population during the previous decade.	+
Retirement Transfers	Per capita retirement transfer payments.	+
Income Maintenance Transfers	Per capita income maintenance transfer payments.	+
Unemployment Transfers	Per capita unemployment transfer payments.	+
Farm Program Transfers	Per capita farm program transfer payments	+
Veteran Benefit Transfers	Per capita veteran benefit transfer payments.	+
Total County Government Expenditures	Per capita county government total expenditures.	+
County Highway Expenditures	Per capita county government expenditures for highways.	+
County Education Expenditures	Per capita county government expenditures for education.	+
County Welfare Expenditures	Per capita county government expenditures for welfare programs.	+
County Health Expenditures	Per capita county government expenditures for health programs.	+

DETERMINANTS OF INCOME DISTRIBUTION AT THE COUNTY LEVEL

Correlation Analysis

Correlation coefficients were calculated to determine the degree to which structural and policy variables relate to income distribution (Gini-ratio). Table 2 lists the correlation coefficients for census years 1960, 1970 and 1980. In addition, the table lists the correlation's probability level and the percentage of variance (r^2) in Gini-ratio explained by each predictor variable in each of the three years that were analyzed.

Structural Variables

A number of similarities were noted among the three years when comparing the structural variables correlation coefficients. In 1960, the scale of farming was inversely related to income distribution (1960 Gini-ratio) (r=-.320). The greater the proportion of commercial farms in a county, the more equal was the county's distribution of income and the lower the Gini-ratio. This relationship remained significant in 1970 (r=-.257) and in 1980 (r=-.279).

Although significantly related in all three census years, the correlation coefficient for percentage of population living in urban places was higher in 1980 (r=-.389) than in either 1960 (r=-.129) or 1970 (r=-.166). This indicates that the greater the percentage of residents living in urban places, the more equal was the county's distribution of income (that is, the lower the Gini-ratio).

The percentage of the population age 25 and over with a high school degree was a third structural variable significantly related to Gini-ratios in all three years. Although the relationship was strong in 1960, 1970 and 1980, it diminished slightly over time (r=-.512, r=-.310 and r=-.271, respectively).

Other structural variables were significantly related with income distribution at only two points in time. The percentage of the county's labor force comprised of women was related to income distribution in 1970 (r=-.180) and in 1980 (r=-.340), but not in 1960 (r=-.048).

The relationship between the percentage of the labor force employed in manufacturing underwent directional change between 1960 and 1980. In 1960, a weak but significant positive relationship was found between percentage of the labor force employed in manufacturing and the Gini-ratio (r=.169). In 1970, the relationship remained weak, but the sign reversed (r=-.155). In 1980, however, the relationship between manufacturing employment and the Gini-ratio remained inverse but had considerably more strength (r=-.363).

Thus, the relationship between manufacturing employment and the Gini-ratio made a transition during the two decades. The greater the percentage of the labor force employed in manufacturing in 1960, the less equal was the distribution of income. However, by 1980, the greater the percentage of the labor force employed in manufacturing, the more equal was the distribution of income. By comparison, the percentage of the labor force employed in services was inversely related to the Gini-ratio, while the strength of the relationship declined over the three years.

Overall, stronger relationships were found between structural variables and income distribution in 1980 than in either 1960 or 1970. The strongest structural variables that served as predictors of income distribution across time included percentage of high school graduates, manufacturing employment, percentage of urban population, and scale of farming.

The structural variable that displayed the most consistent relationship with the Gini-ratio was retail trade income. Moderate but significant correlation coefficients were found for retail trade income in 1960, 1970 and 1980 (r=-.276, r=-.226 and r=-.280, respectively). Three other variables were significantly correlated with the Gini-ratio in 1960 and 1970, but not in 1980. In 1960, service industry income, net earnings, and earnings from dividends, interest and rent had correlation coefficients with the Gini-ratio of -.196, -.286 and -.458, respectively. In 1970, the correlation coefficients of services income, net earnings, and income from dividends, interest and rent were -.191, -.265 and -.262, respectively.

Several structural variables were significantly correlated with the Gini-ratio in only one year. Those variables included government income in 1960 (r=-.297), manufacturing income in 1980 (r=-.394) and wholesale income in 1980 (r=-.207). Agricultural income was not significantly correlated with the Gini-ratio in any of the years analyzed.

Table 2. Correlation Coefficients of Structural and Policy Variables with Gini-ratios.[a]

	1960			1970			1980		
Variable	**r**	**r^2**	**p**	**r**	**r^2**	**p**	**r**	**r^2**	**p**
Structural Variables									
High School Graduates	-.512	.262	****	-.310	.096	****	-.271	.073	***
Manufacturing Employment	.169	.029	***	-.155	.024	**	-.363	.132	***
Services Employment	-.142	.020	**	-.124	.015	**	-.054	.003	
Urban Population	-.129	.017	**	-.166	.028	***	-.389	.151	***
Commercial Farms	-.320	.102	****	-.257	.066	****	-.279	.078	***
Women in Labor Force	-.048	.002		-.180	.032	***	-.340	.116	***
Political Participation	-.099	.010	*	.139	.019	**	.279	.078	***
Manufacturing Income	-.020	.000		-.163	.027	***	-.394	.155	***
Government Income	-.297	.088	****	-.033	.001		-.057	.003	
Wholesale Trade Income	-.184	.034	***	-.129	.017	**	-.207	.043	***
Agriculture Income	.003	.000		-.098	.010	*	-.053	.003	
Retail Trade Income	-.276	.076	****	-.226	.051	****	-.280	.078	***
Services Income	-.196	.038	****	-.191	.036	****	-.146	.021	**
Net Earnings	-.286	.082	****	-.265	.070	****	-.116	.013	*
Dividends, Interest, Rent	-.458	.210	****	-.262	.069	****	-.117	.014	*

* p LE .05
** p LE .01
*** p LE .001
**** p LE .0001

(Table 2 cont. on page 31)

[a]As used above, "r" is the zero-order correlation coefficient; "r^2" is the square of the zero-order correlation coefficient and provides an estimate of the percentage of the variance in the Gini-ratio explained by the independent variables; "p" is the approximated probability of r.

Policy Variables

Policy variables used in the analysis were significantly correlated with the Gini-ratio more frequently in 1960 than in either 1970 or 1980. Three variables--percentage change in population, retirement transfer payments, and income maintenance transfer payments--were correlated with the Gini-ratio in each of the three years. The correlation coefficients of population change with the 1960, 1970 and 1980 Gini-ratios were -.101, -.151 and -.312, respectively. The correlation coefficients of retirement transfer payments with the Gini-ratios in 1960, 1970 and 1980 were -.162, -.157 and -.280, respectively. The negative signs on the correlation coefficients between population change and retirement transfer payments with the Gini-ratios indicate that as the level of any of these predictor variables increased, income inequality decreased. Income maintenance transfer payments had correlation coefficients with the Gini-ratios for 1960, 1970 and 1980 of .319, .188 and .256, respectively. The positive signs of these correlation coefficients and the Gini-ratio indicate that increases in income maintenance transfer payments are associated with higher levels of income distribution inequality.

Three policy variables were significantly related to income distribution in 1960 and 1970, but not in 1980. The first was highway expenditures ($r=-.396$, $r=-.156$ and $r=.034$, respectively). The second was education expenditures ($r=-.369$, $r=-.204$ and $r=-.039$, respectively). The third, total county government expenditures, was significantly correlated with Gini-ratios in 1960 and 1970, but not in 1980. The correlation coefficients for these were $r=-.521$, $r=-.257$ and $r=-.057$, respectively.

Three policy variables were significantly related to income distribution in 1960 and 1980, but not in 1970. The first was unemployment transfers ($r=.142$, $r=-.172$ and $r=-.056$, respectively). Unemployment transfer payments were positively related to the 1960 Gini-ratio, although the 1980 unemployment transfer payments were inversely related to that year's Gini-ratio. Second, veteran benefit transfer payments were positively related to the Gini-ratios of 1960, 1970 and 1980 ($r=.295$, $r=.053$ and $r=.162$, respectively). Finally, county welfare program expenditures were inversely related to Gini-ratios in 1960, 1970 and 1980 ($r=-.416$, $r=.095$ and $r=-.120$, respectively).

Regression Analysis

Regression analysis was used to determine how structural variables and policy variables were related to income inequality at times when other variables were controlled. Three criteria were used to select explanatory variables from the complete set (Table 1). Explanatory variables needed to: (1) be of particular theoretical import; (2) maintain statistical significance in a regression with all other predictor variables with a minimum probability of .05 for at least two of the three years analyzed; and/or (3) be noncollinear with other variables at any given year.

Table 2, cont. Correlation Coefficients of Structural and Policy Variables with Gini-ratios.

	1960			1970			1980		
Variable	r	r^2	p	r	r^2	p	r	r^2	p
Policy Variables									
Population Change	-.101	.010	*	-.151	.023	**	-.312	.097	****
Retirement Transfers	-.162	.026	***	-.157	.025	**	-.280	.078	****
Income Maintenance Transfers	.319	.102	****	.188	.035	***	.256	.066	****
Unemployment Transfers	.142	.020	**	-.056	.003		-.172	.030	***
Farm Program Transfers	---	---		-.023	.001		.294	.086	****
Veteran Benefit Transfers	.295	.087	****	.053	.001		.162	.026	**
Total County Government Expenditures	-.521	.271	****	-.257	.066	***	-.057	.003	
County Highway Expenditures	-.396	.157	****	-.156	.024	**	.034	.001	
County Education Expenditures	-.369	.136	****	-.204	.042	****	-.039	.001	
County Welfare Expenditures	-.416	.173	****	.095	.009		-.120	.014	*
County Health Expenditures	-.125	.016	**	-.056	.003		-.005	.000	
N	397			397			397		

* p LE .05
** p LE .01
*** p LE .001
**** p LE .0001

Collinearity was defined as occurring between two variables if the correlation coefficient was equal to or greater than 0.75 (see Appendix Tables B.2, B.3 and B.4). While this may appear conservative, it seemed prudent to use this cutoff given the number of counties (N=397).

Using these criteria, 10 explanatory variables were selected to be regressed against the Gini-ratios for 1960, 1970 and 1980. Five structural variables were used in the model. These include the percentage of the population age 25 and over having completed at least a high school degree, percentage of the labor force employed in manufacturing, percentage of the labor force employed in services, percentage of the labor force made up of women, and commercial farms as a percentage of all farms in 1978. Five policy variables were also used in the model. These include percentage change in county population since the last census; retirement income maintenance and unemployment transfer payments; and total county government expenditures.

1960 Regression Model

When taken as individual sets of variables, policy variables were slightly better predictors of income distribution in 1960 than were structural variables (Table 3). When decomposed into independent variable sets, the R^2 statistics for structural and policy variables were .283 and .331, respectively. In the decomposed sets, three policy variables were significantly related to income distribution. These include retirement and income maintenance transfer payments and total county government expenditures (beta=-.200, beta=.202 and beta=-.438, respectively). Income maintenance transfer payments were positively related to the Gini-ratio, although the other two variables were inversely related with it. In the decomposed set, structural variables that were significantly related to the Gini-ratio include the proportion of high school graduates and the scale of farming (beta=-.452 and beta=-.116, respectively). The full 10-variable model explained more than one-third of the Gini-ratio variance (adjusted-R^2=.364). The beta-weights for services employment and unemployment transfer payments changed signs when included in the 10-variable model, although neither variable was statistically significant. In addition, the proportion of commercial farms dropped from statistical significance in the full model.

1970 Regression Model

When taken independently, structural variables and policy variables were weak predictors of income distribution in 1970 (Table 4). These sets of variables achieved R^2s of only .171 and .148, respectively. Three structural variables (proportion of high school graduates, manufacturing employment, and proportion of commercial farms) were significant predictors of the Gini-ratio (beta=-.301, beta=-.247 and beta=-.141, respectively). As in 1960, the proportion of women in the labor force was not a statistically significant variable and maintained a positive sign.

Table 3. Estimated Coefficients for Selected Structural and Policy Variables Regressed on Gini-ratios, 1960

Variables	Structural Variables beta	Policy Variables beta	All Variables beta
Structural Variables			
High School Graduates	-.452***		-.238***
Manufacturing Employment	.092		.107
Services Employment	.000		-.014
Women in Labor Force	.020		.021
Commercial Farms	-.116*		-.080
Policy Variables			
Population Change		.031	.055
Retirement Transfers		-.200***	-.152**
Income Maintenance Transfers		.202***	.155**
Unemployment Transfers		.066	-.055
Total County Government Expenditures		-.438***	-.294***
R^2	.283	.331	.380
Adjusted-R^2	(.274)	(.322)	(.364)
N	397	397	397

*p less than or equal to .05
**p less than or equal to .01
***p less than or equal to .001

All policy variables served as significant predictors of income distribution when decomposed into an independent set of variables. The beta-weights for population change; retirement, income maintenance and unemployment transfer payments; and total county government expenditures were -.180, -.189, .160, -.122 and -.211, respectively. Each variable was inversely related to the Gini-ratio with the exception of income maintenance transfer payments.

The full 10-variable model accounted for 19 percent of the Gini-ratio variance. When structural and policy variables were merged, three structural variables (proportion of high school graduates, manufacturing employment and proportion of commercial farms) remained as significant variables. Additionally, only three of the policy variables remained significant (retirement and unemployment transfer payments and total county government expenditures). The beta-weight for each of these variables fell appreciably from their levels in the independent model.

1980 Regression Model

When regressed individually on income distribution, structural variables explained a greater proportion of income distribution in 1980 than did policy variables (Table 5). Whereas structural variables achieved an R^2 of .328, the R^2 of policy variables was only .225.

Four of the five variables in the structural set were significantly related to income distribution. The beta-weights for proportion of high school graduates, manufacturing employment, proportion of women in the labor force, and proportion of commercial farms were -.314, -.407, -.140 and -.168, respectively. Four of the five policy variables (population change and retirement, income maintenance and unemployment transfer payments) were significantly related to the Gini-ratio (beta=-.357, beta=-.258, beta=.342 and beta=-.127, respectively). The positive sign on income maintenance transfer payments indicates that it was directly related to income distribution inequality.

The 10-variable model explained nearly 39 percent of the Gini-ratio variance. Each of the variables significantly related to income distribution in their decomposed models was also statistically significant in the full model.

Summary

Based on correlation and regression analysis, it appears that the role of the identified determinants of income distribution has changed over the past three decades. Policy variables were slightly more significant determinants of income distribution in 1960. However, structural variables proved to be the most significant predictors in 1980. Structural and policy variables were equally important in 1970, suggesting that this was a transition period.

Table 4. Estimated Coefficients for Selected Structural and Policy Variables Regressed on Gini-ratios, 1970

Variables	Structural Variables beta	Policy Variables beta	All Variables beta
Structural Variables			
High School Graduates	-.301***		-.216**
Manufacturing Employment	-.247***		-.204**
Services Employment	-.051		-.049
Women in Labor Force	.019		.068
Commercial Farms	-.141**		-.129*
Policy Variables			
Population Change		-.180***	-.055
Retirement Transfers		-.189***	-.118*
Income Maintenance Transfers		.160**	.079
Unemployment Transfers		-.122*	-.132*
Total County Government Expenditures		-.211***	-.136*
R^2	.171	.148	.210
Adjusted-R^2	(.160)	(.137)	(.190)
N	397	397	397

*p less than or equal to .05
**p less than or equal to .01
***p less than or equal to .001

Table 5. Estimated Coefficients for Selected Structural and Policy Variables Regressed on Gini-ratios, 1980

Variables	Structural Variables beta	Policy Variables beta	All Variables beta
Structural Variables			
High School Graduates	-.314***		-.262***
Manufacturing Employment	-.407***		-.264***
Services Employment	-.018		.012
Women in Labor Force	-.140*		-.150**
Commercial Farms	-.168***		-.158***
Policy Variables			
Population Change		-.357***	-.196***
Retirement Transfers		-.258***	-.151**
Income Maintenance Transfers		.342***	.204***
Unemployment Transfers		-.127**	-.139**
Total County Government Expenditures		-.047	-.031
R^2	.328	.225	.402
Adjusted-R^2	(.320)	(.215)	(.386)
N	397	397	397

*p less than or equal to .05
**p less than or equal to .01
***p less than or equal to .001

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CHAPTER FIVE

STRUCTURAL FACTORS AS DETERMINANTS OF INCOME DISTRIBUTION

Five structural variables were selected for inclusion in a regression model as determinants of county-level income distribution. These variables were considered potential determinants of income distribution, and in some cases, of each other. To analyze the systemic relationships of structural variables and income distribution, path analysis was used. Path analysis is a multivariate statistical procedure that illustrates linear causal relationships in a closed system of variables. It is used to determine both direct and indirect relationships.

Level of Education

The percentage of population age 25 and over having completed a high school degree was significantly related to the Gini-ratio in all three years. Figure 5 depicts the path analysis results for resource variables in 1960. For simplicity, only direct effects of 0.15 and above are displayed. In 1960, the proportion of high school graduates was related significantly to the Gini-ratio (beta=-.24). Endowment variables most strongly related to the proportion of high school graduates were the proportion of commercial farms (beta=.21) and manufacturing employment (beta=-.15).

Path analysis revealed the 1970 proportion of high school graduates was also a significant predictor of the Gini-ratio (beta=-.22) (Figure 6). In addition, the proportion of high school graduates contributed to the 1970 Gini-ratio through its relationship with manufacturing employment (beta=-.16), which was also a significant predictor of the Gini-ratio. Commercial farming served as the only endowment variable predictor of the 1970 proportion of high school graduates (beta=.21).

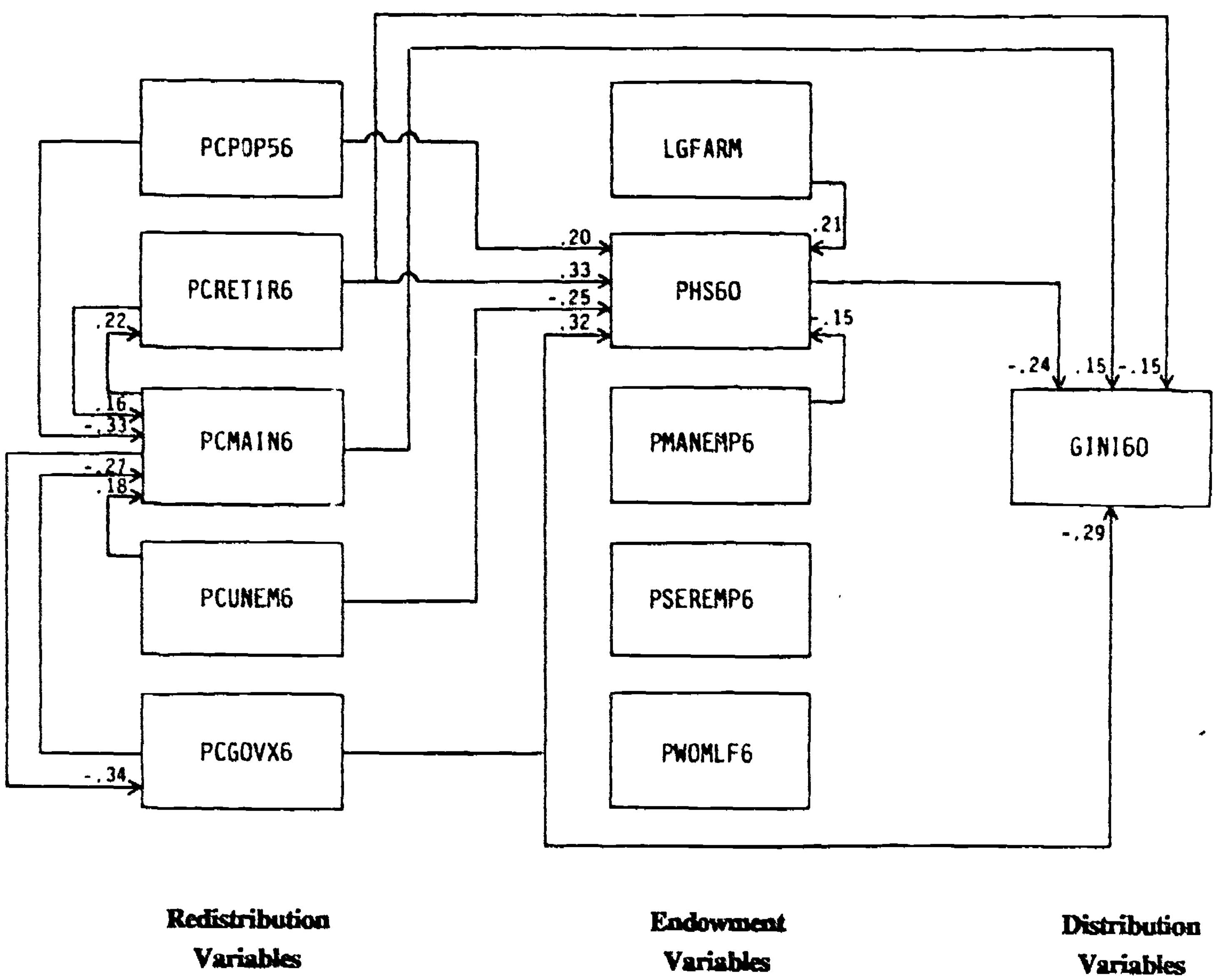

Figure 5. Path analysis displaying determinants of income distribution, 1960.

The percentage of persons age 25 and over with a high school degree increased from 37.1 percent in 1960 to 47.6 percent in 1970. Part of this increase may be explained by the larger number of veterans using their educational benefits and the increased appropriations available for education from President Johnson's "Great Society" and "War on Poverty" programs.

As illustrated in Figure 7, the 1980 proportion of high school graduates was a significant predictor of the Gini-ratio in 1980 (beta=-.26). As in both 1960 and 1970, the proportion of commercial farms was an important predictor of education level (beta=.24). By 1980, more than one-half of the "baby boom" generation was over age 25. This helps account for the increase in high school educated people, which went from 47.6 percent in 1970 to 61.7 percent in 1980. As the educated "baby boom" generation aged to 25 years old and over, they composed a sizeable portion of the entire 25-years-old-and-over group.

Given these findings, what policy implications might be suggested? If we take these findings at face value, efforts aimed at increasing the educational level of residents should have the effect of redistributing incomes more equitably. This has been the belief of both conservative and liberal policymakers for the past several decades (Thurow 1975). The advantage of this approach as perceived by policymakers is that increasing education leads to a measure of income redistribution without requiring any major redistribution of capital. The findings support the human capital theory in that increased education enhances income, at least its equivalent distribution. Since our dependent variable has been income distribution rather than income levels, our findings would qualify human capital theory by noting that an increase in aggregate education level is associated with income equality.

As indicated in Table 2, the proportion of high school graduates was strongly correlated with the Gini-ratio for each of the three years. The strength of that relationship, however, diminished over time. Additionally, the amount of money spent by local governments on education was highly correlated with the Gini-ratio, and the strength of that relationship also diminished appreciably over time.

The amount of money expended by all governments on education nationwide increased dramatically during the last 30 years. It rose from $8.7 billion in 1950 to $164.5 billion in 1980. The three-decade rise was dramatic even when inflation was considered. When calculated in 1967 constant dollars, total government expenditures for education nationwide jumped from $12.2 billion in 1950 to $66.7 billion in 1980 (Appendix Table B.5).

However, when the increase in number of school enrollments as a result of the "baby boom" is considered, a different picture emerges. Educational expenditures per student (in 1967 constant dollars) rose from $390 in 1950 to $617 in 1960, a jump of more than 58 percent (Figure 8). Between 1960 and 1970, constant dollar expenditures per student increased from $617 to $1,038, a rise of more than 68 percent. Between 1970 and 1980, constant dollar expenditures per student began to level. It rose from $1,038 to $1,144, an increase of only 10 percent. Prior to 1970, expenditures per student rose for the kindergarten through 12th-grade level (K-12) and for the college level. After 1970, expenditures per student continued to rise modestly for the K-12 level (21.67 percent), but dropped for the college level (-28.01 percent).

Most researchers have concluded that a relationship exists between education and income distribution, but many are reluctant to infer a causal link. For example, Bowles (1972) notes interrelationships between the social class from which people come and their educational and income levels. He concluded that neither social class nor education determines income directly. Instead, these factors determine the number of occupational opportunities from which people are able to choose. Thus, those with higher education and from higher social status backgrounds have greater opportunities to choose jobs with greater monetary and nonmonetary rewards.

Similarly, Thurow stated that "instead of people looking for jobs, there are jobs looking for people--for 'suitable' people" (1975:68). The first approach Thurow labeled "wage competition" theory, while the second he referred to as "job competition" theory. He argued that the increasing supply of more-educated workers forces them to accept less favorable jobs that would have been taken by those with lower education levels. Programs aimed at increasing educational levels have served to change the supply of more-educated workers, not necessarily the demand.

Thurow also notes that education becomes a good investment at the individual level, not simply because it raises one's income, but rather because it raises one's income relative to others. Thus, "education becomes a defensive measure necessary to protect one's 'market share'" (1975:79). On the national level, Thurow believes massive educational investments as a means of redistributing income may be wasted. Rather, he opts to make a frontal attack on wage differentials through technical progress, guaranteed government jobs, policies designed to create labor shortages, public wage scales to exert pressure on low-wage employers, and incentives to encourage employers to compress wage differentials.

Programs aimed at increasing educational levels appear to have been effective in the 1950s and 1960s. They may have been of less value in the 1970s. A growing proportion of the labor force presently holds educational degrees compared with the number only a few decades ago. If education is to continue to serve as a means of redistributing income in agriculture-dependent areas, policies need to be adopted that will increase occupational opportunities as well as enhance educational opportunities.

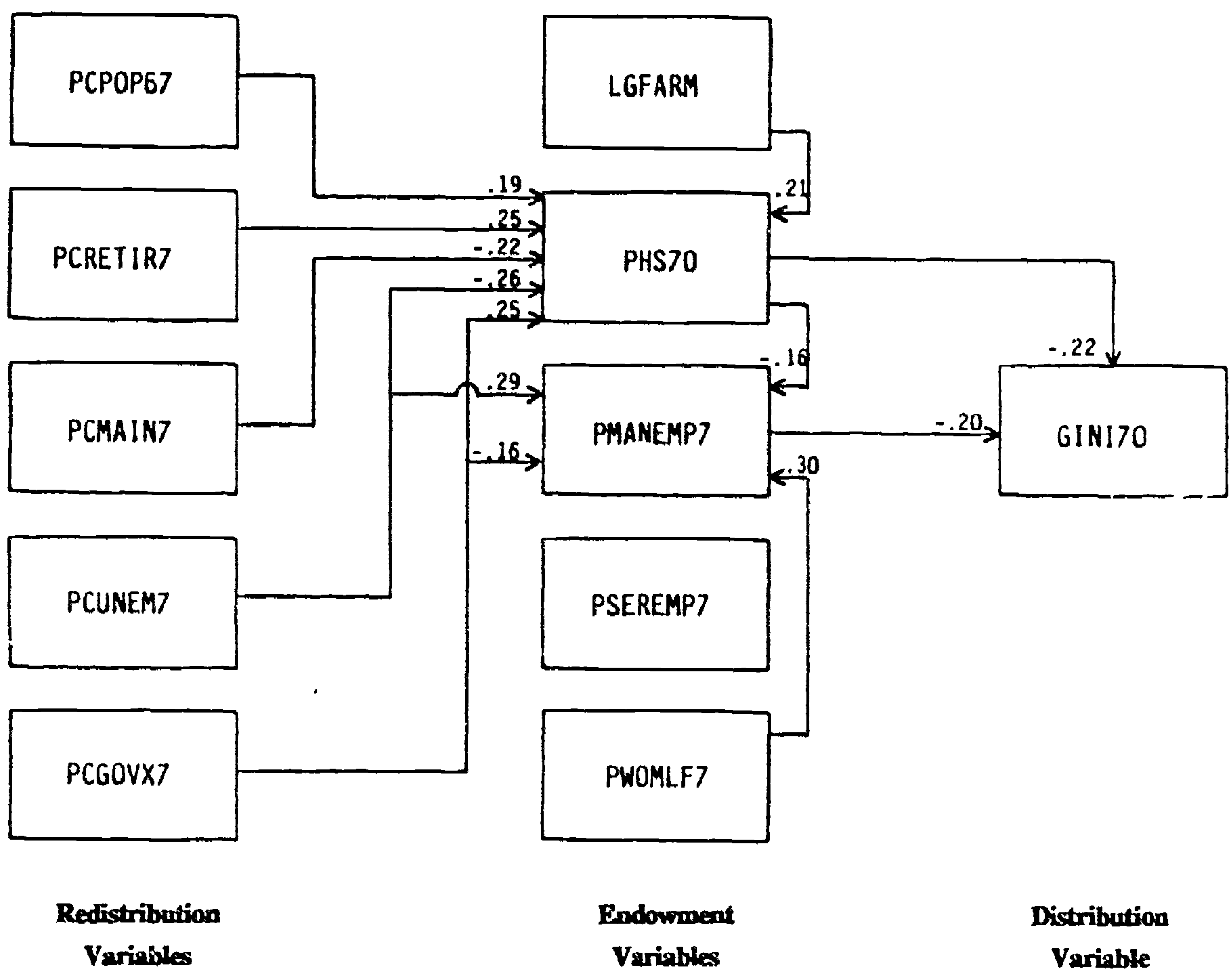

Figure 6. Path analysis displaying determinants of income distribution, 1970.

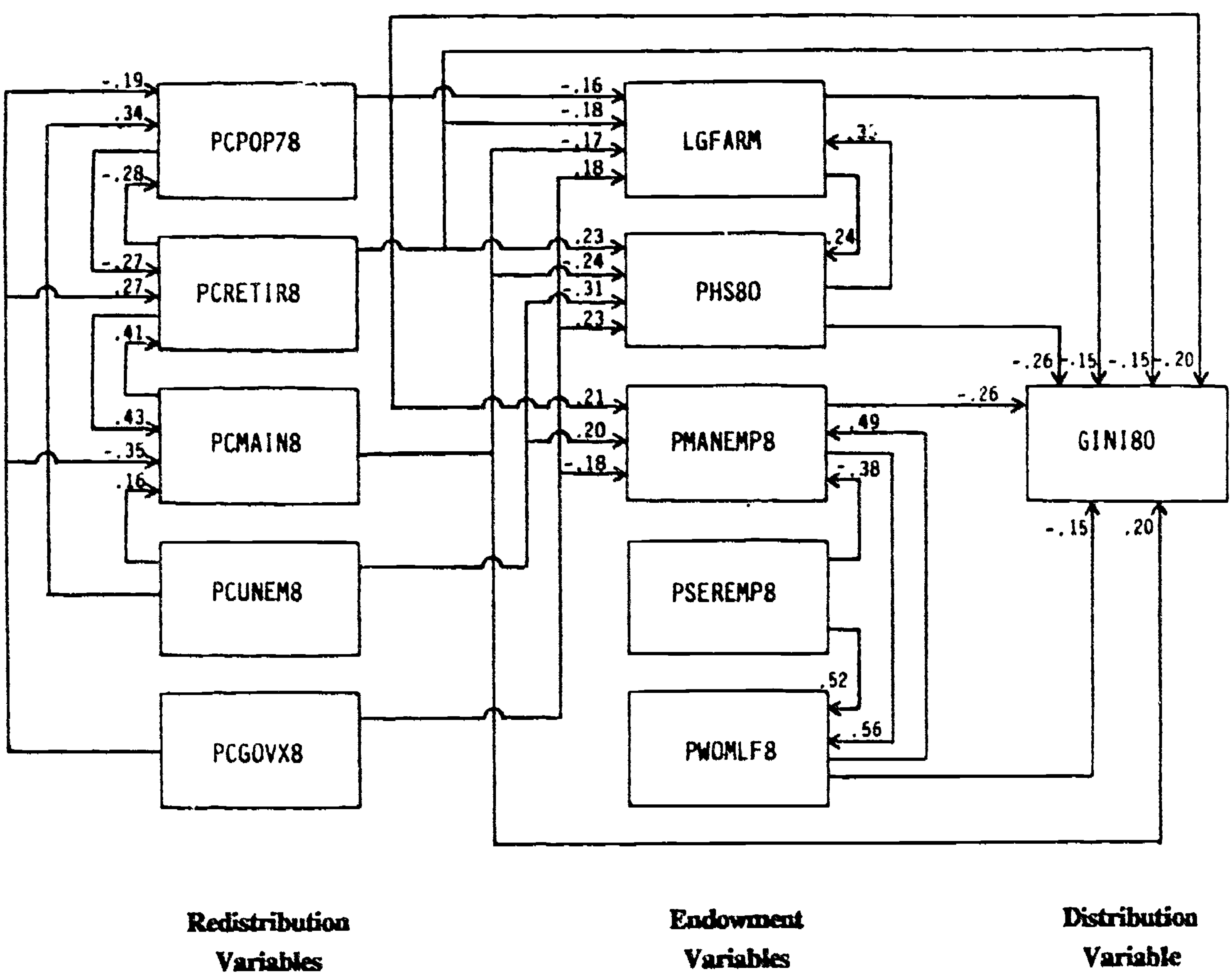

Figure 7. Path analysis displaying determinants of income distribution, 1980.

Manufacturing Labor Force

Neither regression analysis nor path analysis show the percentage of the labor force employed in manufacturing as a significant predictor of the Gini-ratio in 1960. The variable was indirectly related to income inequality through its relationships with the 1960 percentage of high school graduates (beta=-.15) (Figure 5). However, the negative correlation suggests increased rural manufacturing is associated with lower educational levels. The earlier discussion of the impact of education on income distribution implies that rural manufacturing may have important negative consequences for rural areas. For example, it is possible to conclude from the inverse relationship that rural manufacturing is ineffective in helping a community retain its educated population, an endowment that facilitates income equality.

It is interesting to note that in both 1970 and 1980, the percentage of the labor force employed in manufacturing was a strong predictor of the Gini-ratio (beta=-.20 and -.26, respectively). Additionally, services employment was inversely related to the manufacturing employment in 1980 (beta=-.38), while the proportion of women in the labor force in 1980 revealed a positive association (beta=.49) (Figure 7).

The emphasis on manufacturing as a facet of community and economic development during the 1970s and 1980s was in part based on the assumption that manufacturing equalizes income distribution. Some support for this notion has been documented. For example, in their study of rural Texas communities, Reinschmiedt and Jones (1977) found that locating a new industry in a community has a positive effect on incomes of those employed by the industries. Other researchers, however, have been skeptical of the relationship between industrial development and improved incomes. Summers and Clemente (1976) found that industrial development failed to significantly impact economic status (total annual income) in their sample of counties in Illinois. Additionally, Rogers et al. (1978) found mixed support for the relationship between change in manufacturing and change in levels of income in their sample of Iowa counties.

The fact that manufacturing employment was significantly related (negative sign) to the Gini-ratio inequality in 1970 and 1980, but not in 1960, supports the findings of Kuznets (1955). He held that early periods of industrialization are associated with greater income inequality while later periods are associated with greater income equality. The stage of industrialization (Murdock and Schriner 1978) may account for this disparity.

Policymakers need to be aware that increasing manufacturing employment in agriculture-dependent counties may not have an immediate effect of redistributing income. It may, however, have the potential to do so over the long term. Additionally, our findings suggest that those counties developing their manufacturing industries may need to anticipate additional economic changes. For example, we found that retirement income in counties may increase with expanding manufacturing. This may reflect additional payments to social insurance and pension programs for employees retiring in the county. Alternatively, it may imply the loss of the young and more mobile residents of the community that inflates the number of elderly per capita. Finally, an increase in unemployment payments may be associated with rising manufacturing employment. This may result from the selective nature of employment within the manufacturing industry as illustrated by the high proportion of employed women.

Female Labor Force

Although the proportion of women in the labor force contributes to manufacturing employment (beta=.30), the variable did not play a major role in determining the distribution of income until 1980. In 1980, the proportion of women in the labor force was a significant predictor of the Gini-ratio (beta=-.15). In addition, the proportion of women in the labor force in 1980 made a strong contribution to manufacturing employment (beta=.49) (Figure 7).

In all three years, the proportion of women in the labor force was positively related to both manufacturing and services employment (Appendix Tables B.2, B.3 and B.4). As the proportion of the labor force composed of women grew, so too did the number of manufacturing and service employees as a percentage of all employees. The proportion of women in the labor force was not significantly related to the Gini-ratio until 1980. This may suggest that women's pay schedules did little to improve the relative distribution of income in the region. Also, it probably reflects the sharp increase of women entering the labor force in the 1970s. On average, 25 percent and 32 percent of the labor force was composed of women in 1960 and 1970, respectively. That number reached 37 percent in 1980.

The proportion of women workers is expected to continue growing throughout the 1980s. Although gains will likely be made in the proportion of women employed in a variety of traditionally male-dominated professions, women will continue to provide the bulk of employees in the low-wage manufacturing and service sectors. Policymakers need to consider means to improve women's employment opportunities as well as pay schedules to have a significant impact on the distribution of wage income in rural counties.

Commercial Farms

Large, commercial farms as a proportion of all farms in a county was not a significant predictor of the Gini-ratio in either 1960 or 1970, but it was in 1980. The proportion of commercial farms was indirectly related to income inequality in all three of the years analyzed through a curious association with education levels. Counties with a higher percentage of commercial farms had a higher proportion of high school educated adults in 1960 (beta=.21), 1970 (beta=.21) and 1980 (beta=.24).

Although this association is difficult to explain, policymakers should consider its ramifications. For example, it may imply that counties with large commercial farms may also have a significant pool of unemployed or underemployed workers. In particular, women are often available for off-farm employment. This is an important human resource that should be tapped.

According to Schultz's (1951; 1953) urban-industrial impact hypothesis, farms located near cities will be more profitable than those located farther away from cities. Higher profitability results from the farmers' need to mechanize in order to compete with the city for labor and land. Because counties with no urban centers are more likely to be agriculture-dependent, it is anticipated that farms located in these counties would be relatively less profitable than nonagriculture-dependent counties.

Although the total number of farms in the U.S. has declined since the mid-1930s, differences in rates of change are evident in size of farms. The number of farms with annual gross cash incomes of less than $10,000 fell from 3,126,000 in 1960 to 1,239,000 in 1980, a drop of 60 percent. However, the number of farms with annual gross cash incomes of $40,000 and over grew from 113,000 in 1960 to 625,000 in 1980, an increase of more than 450 percent. While the number of farms with income of $40,000 and over comprise only 2.9 percent of all farms in 1960, they comprise nearly 26 percent of all farms in 1980. On the other hand, farms with incomes of less than $10,000 fell from 78.9 percent of all farms in 1960 to 50.9 percent of all farms in 1980 (Figure 9; Appendix Table B.6).

Large farms have been found to receive a disproportionately larger share of government commodity program payments (Cochrane 1986; Reinsel et al. 1987). In 1980, commercial farms were 22.9 percent of the nation's farms, brought in 82.9 percent of the nation's farm income, and accepted 73 percent of government payments designated for the nation's farms (Figure 10; Appendix Table B.6). Proponents of farm program payments point to the benefit of these payments to all residents of a community or trade area as the result of a multiplier effect, which occurs as money injected into a local economy is recirculated through buying and selling goods and services.

However, our data show that counties receiving larger government farm payments have less equitable income distributions. (Table 2 indicates the positive correlation coefficient between the 1980 Gini-ratio and farm program transfer payments is .294.) While this finding may reflect the relationship of larger farm payments going to larger farms (the correlation coefficient between the proportion of large, commercial farms in a county and the 1980 farm program transfer payments was .202), it may also reflect the disparity of county-aggregated government farm payments across the North Central region. Counties dominated by ranching receive a relatively small amount of farm payments compared with counties that are dominated by feed-grain or wheat farms.

Medium- and large-sized farms add to a county's total income, but add less to its population base than do smaller farms. Small farms are unable to adopt size-dependent practices and their net incomes are small. Large farms, on the other hand, are able to realize economies of size and enjoy larger net incomes as a result of their higher volume (Cook and Knutson 1987).

As indicated by the inverse relationship between the proportion of large, commercial farms and the 1980 Gini-ratio, counties with a greater proportion of commercial farms had a more equal distribution of income in 1980. Commercial-sized farms add to a county's total income, but add less to its population base than do smaller farms. In counties with smaller proportions of commercial farms, a wider range of farm sizes exist; there is greater heterogeneity. Income distribution may have less to do with the scale of agriculture than it does with homogeneity of farm size. The more homogeneous a county's farms are, the more equally distributed their incomes may be.

Policymakers need to be aware that policies related to agriculture may have an impact on county-level income distribution. The more their policies equalize the income among farmers, the more equal the county's distribution of income as a whole will be. One suggestion for equalizing farm incomes has been to eliminate direct government payments and subsidies to large, commercial farm operations (Office of Technology Assessment 1986).

Services Labor Force

The proportion of the labor force employed in services was not a significant predictor of income inequality for any of the three years. This is not surprising, considering the relatively low wages paid to employees in this sector of a local economy. If anything, this sector may help maintain the social and economic structures that currently exist. Policymakers and development specialists should attempt to enhance service industries in their counties. However, they need to be aware that their efforts may not be effective in equalizing the distribution of income, at least in the short run.

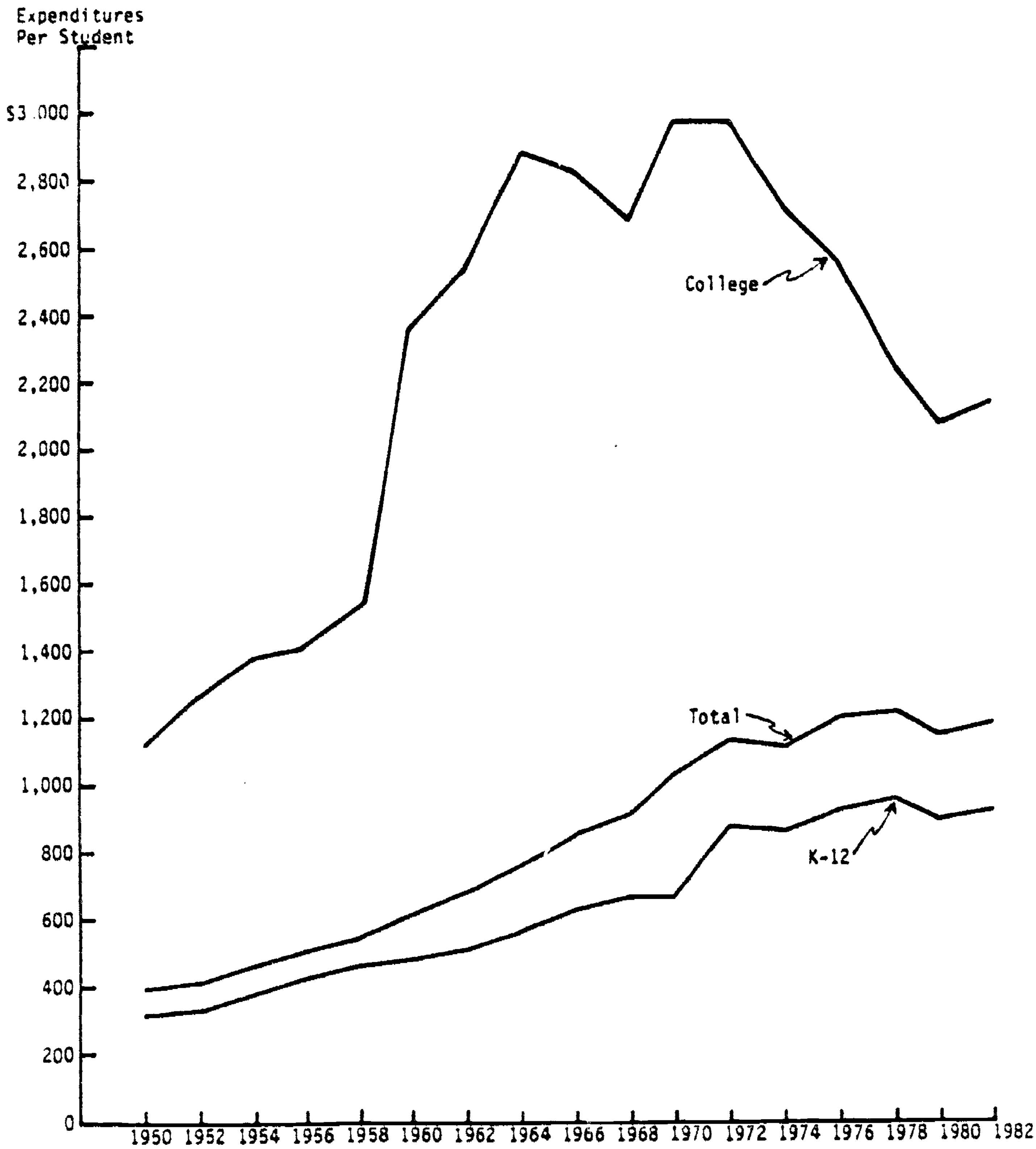

Figure 8. Expenditures per student by level of school (in 1967 constant dollars), United States, 1950-1982.

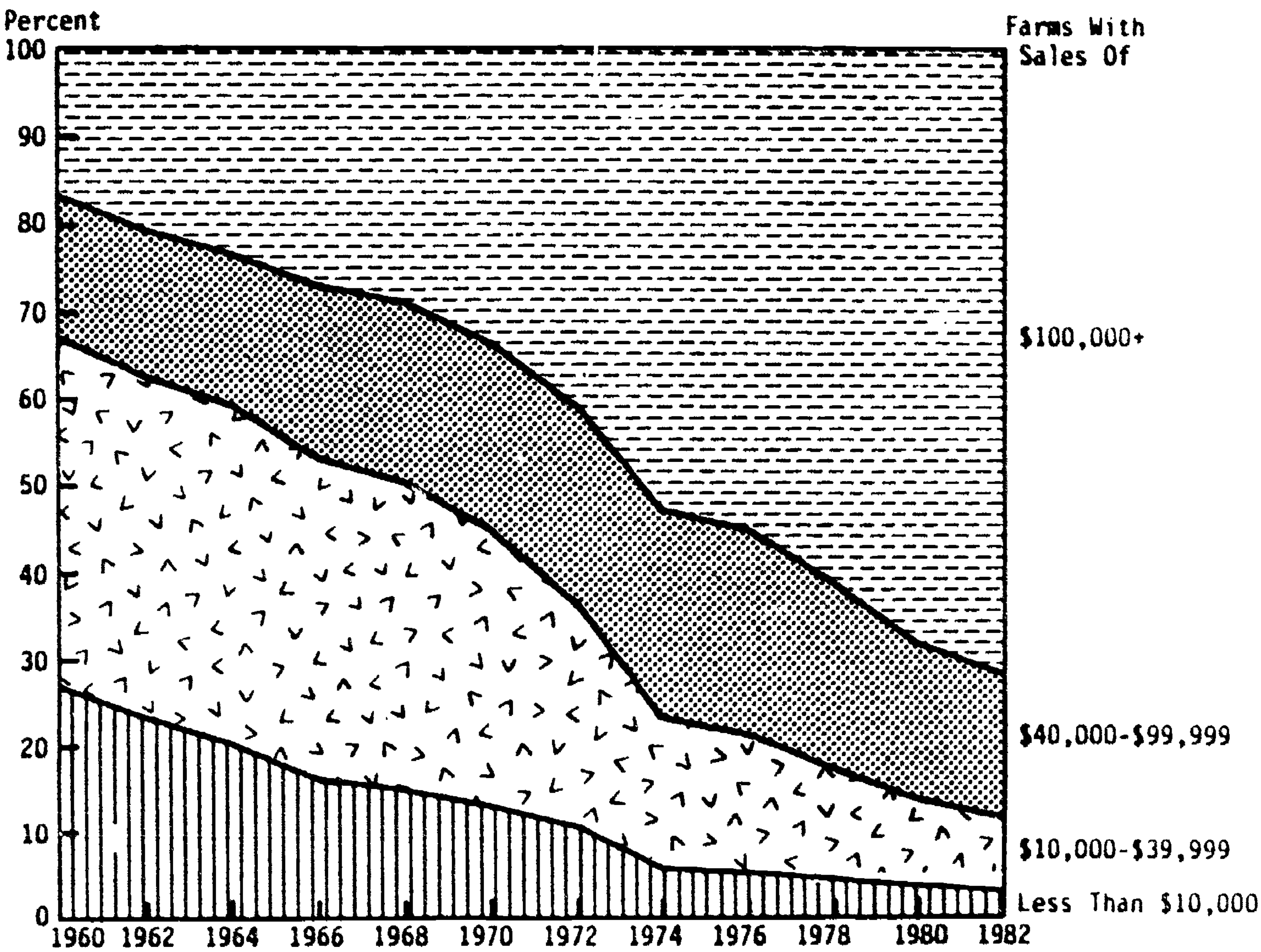

Figure 9. Percent of total gross farm income by value of sales class farms, 1960-1982.

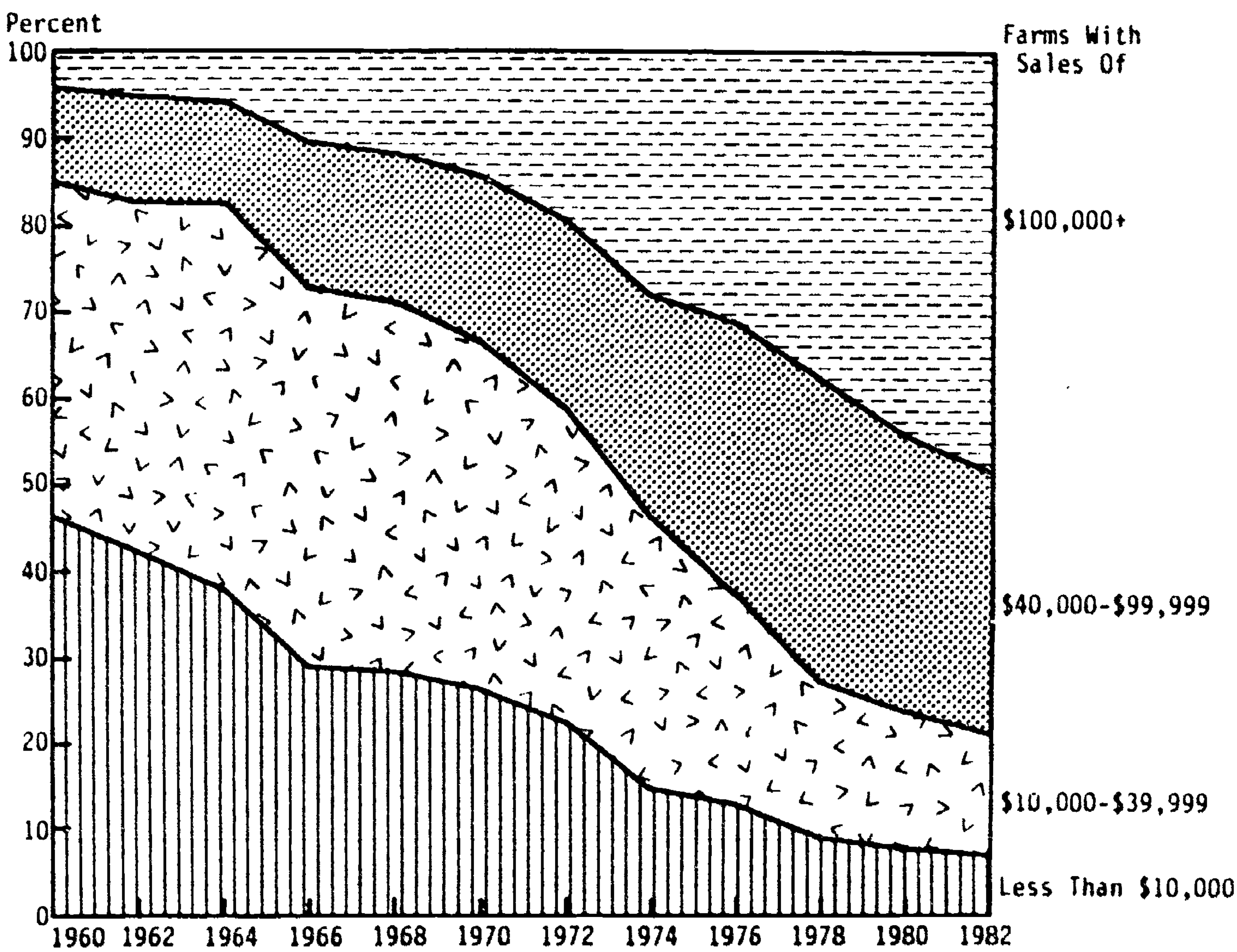

Figure 10. Percent of direct government payments by value of sales class farms, 1960-1982.

CHAPTER SIX

POLICIES AS DETERMINANTS OF INCOME DISTRIBUTION

It is hypothesized that social policies serve to redistribute income both directly and through their impact on local structural variables.

Population Change

It was expected that population change in a county would affect the county's endowment structure over time. Population change serves as an indicator of the nature of market interactions that have occurred or are expected to occur. Population affects income distribution in terms of the income categories of those who may migrate into or out of the county. Indirect effects on income distribution may be more diverse.

Population change served as a significant predictor of the Gini-ratio only in 1980 (beta=-.20). This finding may reflect the positive impact of a population turnaround on rural areas. During the decade of the 1920s, more than 80 percent of U.S. nonmetropolitan counties experienced residential growth, a situation unparalleled since the turn of the century. This "population turnaround" illustrates an important shift from economic concerns to quality of life factors as motivation to migrate.

In each of the years analyzed, population change was related to other variables that affected the Gini-ratio (Figures 5, 6 and 7). Population change was consistently associated with level of education. The beta-weights in 1960, 1970 and 1980 were .20, .19 and .14, respectively. The positive sign indicates that education levels rise with population increases and fall with population declines. Residential growth tends to boost education levels. This finding supports the contention that population expansion helps revitalize rural communities. The income-equalizing effects of education suggests that newcomers to agriculture-dependent counties aid in redistributing income.

A positive relationship was found between population change and the proportion of manufacturing employment in 1980 (beta=.21). This reflects the ability of new or expanding rural manufacturing firms to attract new residents. From this standpoint, community development specialists may wish to consider rural manufacturing as a useful option for economic development in agriculture-dependent counties. This is especially true given that rural manufacturing enhances income equality. However, policymakers need to remain mindful of negative consequences associated with rural manufacturing, as discussed earlier.

In addition to the role it plays in affecting structural variables, population change also affects other policy variables. In both 1960 and 1980, population change was inversely related to income maintenance transfer payments (beta=-.33 and beta=-.35, respectively). This implies that residential growth is an important stimulus to an area's economy which, in turn, is reflected by the lower number of individuals in need of public support.

Retirement Transfer Payments

Retirement transfer payments are a major source of income in the economies of many counties. We expected that the input of retirement transfers would affect lower income individuals, thus decreasing the Gini-ratio. On the other hand, high retirement transfer payments may be an indicator of a higher number of elderly and/or elderly who have the ability to receive higher retirement transfer payments.

In both 1960 and 1980, retirement transfer payments served as a significant predictor of the Gini-ratio (beta=-.15 and beta=-.15, respectively). It should be noted that in 1970 the beta-weight of retirement transfer payments with the 1970 Gini-ratio was -.12 (p=.037), only slightly below the level chosen to represent important priorities. As a result, the value of retirement benefits in bolstering rural economies is quite apparent. The emphasis that community developers need to place on the elderly is highlighted by the disproportionately high number of seniors who reside in our nation's rural farm communities. For example, in 1986, roughly 11.3 percent of urban residents were over the age of 64 and slightly more seniors lived in rural nonfarm areas. However, 13.8 percent of the rural farm residents were elderly.

In all three years analyzed, retirement transfer payments were significantly related to level of education. The beta-weights of retirement transfer payments with proportion of high school graduates in 1960, 1970 and 1980 were .33, .25 and .23, respectively. This relationship is not intuitively obvious and raises a key issue community developers may wish to address. This positive association may represent higher retirement benefits that more educated elderly receive relative to their lesser educated counterparts. This finding suggests that an important economic stratification exists among rural elderly. Planners should seriously explore whether there are pockets of disadvantaged elderly residing in an area because of their potential need for services. Some support for this notion is found in the association between retirement benefits and income maintenance benefits.

In both 1960 and 1980, retirement transfer payments were positively related to income maintenance transfer payments (beta=.16 and beta=.43, respectively). This implies that more public assistance is needed in areas with higher concentrations of elderly. Additionally, we found that retirement transfers were inversely related to population change between 1970 and 1980 (beta=-.28). This may signal the inability of rural areas with high concentrations of elderly to retain its younger residents, thus potentially leading to economic stagnation.

Policymakers need to consider the role retirement programs have on county-level income distribution. Such payments are made to those who usually have a reduced income, thus increasing their annual earnings. Further, counties with a high proportion of retirement transfer payments per capita will most likely have a high proportion of elderly residents (Green 1987). This may be beneficial in that it helps stabilize the county's income. On the other hand, it can be a problem because retirement benefits are often fixed, even during volatile inflationary periods.

Nevertheless, policymakers must also be aware of additional concerns and issues regarding shifting elderly populations. For example, increases in the number of seniors may dramatically increase an area's need for medical services and health facilities. In addition, the critical questions of what rural delivery systems should be implemented or maintained needs to be addressed.

Income Maintenance Transfer Payments

Income maintenance transfer payments are considered a means to provide support for low-income individuals and families. By providing additional funding at the low end of the income scale, an inverse relationship with the Gini-ratio is expected.

Contrary to expectations, higher levels of income maintenance transfer payments were not related to income equality. In both 1960 and 1980, a positive relationship was found between income maintenance transfers and the Gini-ratio (beta=.15 and beta=.20, respectively). The beta-weight for 1970 was only .08 (p=.164).

Income maintenance transfers were not significantly related to any structural variables in 1960. However, it was inversely related to education level (beta=-.22) in 1970. The negative sign indicates that higher levels of income maintenance transfer payments were related to lower education levels. In 1980, income maintenance transfers were again inversely related to education level (beta=-.24) and to the proportion of large, commercial farms in the county (beta=-.17).

Income maintenance transfers were also related to policy variables. In both 1960 and 1980, income maintenance transfers were related to retirement transfers (beta=.22 and beta=.41, respectively). In 1960, income maintenance transfers were inversely related to county government total expenditures (beta=-.34).

Policymakers need to be cautious about accepting a causal link between income maintenance transfers and income distribution. Due to the cross-sectional rather than longitudinal nature of this research project, it is not logical to conclude that increases in income maintenance transfers lead to a less equitable distribution of income. However, it can be stated that such transfers are logically correlated with income inequality. Thus, in those counties where income inequality was the highest, income maintenance transfers were the highest. That such payments were made at all reflects the existing unequal distribution of income.

The incomes of nonfarm families, either white or nonwhite and headed by males under age 65, follow the movements of aggregate income quite closely. However, the incomes of farm families, families headed by women, and those headed by an elderly person are far more isolated from economic growth (Anderson 1964; Thurow 1969; Treas 1983). The latter groups of families are more likely to be in need of income maintenance. While some policymakers have recommended that recipients of income maintenance transfers should be enrolled in work or training programs, such strategies have met with limited success (Rein 1982; Congressional Budget Office 1987). Problems with these programs include reduction in welfare benefits when recipients work, lack of consistent employment opportunities, and lack of employment marketability. These are all issues for policymakers to address.

Total County Government Expenditures

County government expenditures include money spent on such items as highways, education, health, public welfare and police protection. Expenditures for such items are beneficial to those at the top as well as those at the lower end of the income scale. It was hypothesized that counties with higher government expenditures would have more equitable distributions of income.

Of all the policy and structural variables in 1960, government expenditures was the strongest predictor of the Gini-ratio (beta=-.29). It was not, however, a significant predictor of the Gini-ratio in either 1970 or 1980. The beta-weights for county government total expenditures in 1970 and 1980 were .14 (p=.017) and -.03 (p=.554), respectively. Thus, its direct role on redistributing income diminished appreciably over the time period in question.

On the other hand, the role of county government total expenditures increased over time as a means of affecting structural variables. In 1960, county government total expenditures was related only to level of education (beta=.32). In 1970, it was related to both level of education (beta=.25) and inversely related to manufacturing employment (beta=-.16). In 1980, county government total expenditures was related to three structural variables: level of education (beta=.23), manufacturing employment (beta=-.18) and the proportion of large, commercial farms (beta=.18).

In addition, county government total expenditures was related to income maintenance transfer payments in both 1960 and 1980 (beta=-.27 and beta=-.35, respectively). Two other policy variables were affected by county government total expenditures in 1980: retirement transfers (beta=.27) and the change in population between 1970 and 1980 (beta=-.19).

County government expenditures can have an impact on income distribution by either providing goods and services to the residents or by paying those who provide the goods and services. For example, as a county spends funds on public health programs, the level of health in the county would be expected to rise. This, in turn, could affect the amount of work and income lost due to illness. Furthermore, maintaining a public health staff and highway maintenance crews, for example, could provide additional jobs and income.

Policymakers need to be aware that county government expenditures may not directly redistribute income. Rather, it purchases those structures and services that are related to an equitable income distribution or are needed to maintain one. Consistently higher county government expenditures are directly related to higher levels of education among the population and to lower levels of income maintenance transfers, both of which are related to income distribution.

Unemployment Transfer Payments

Per capita unemployment transfer payments were not significantly related to the distribution of income in any of the three years analyzed. They were, however, inversely related to level of education and positively related to income maintenance transfers in both 1960 and 1980. This may suggest that unemployment transfers are not so much a determinant of either of these variables, but rather are a correlational indicator. We might expect that workers displaced through layoffs and the like would be more prevalent among lower wage earners with less education than among their more educated, salaried counterparts.

CHAPTER SEVEN

SUMMARY AND CONCLUSIONS

The purpose of this research was twofold. First, we sought to determine those structural and policy variables related to the distribution of income in agriculture-dependent counties. Second, based on an analysis of the variables that affect income distribution, implications were suggested for policymakers.

Overall, social and economic policies influence county structural variables in several ways. In turn, these structural endowments and policies were influential in determining the distribution of income. A model was developed that included five structural variables (commercial farms, education level, manufacturing employment, services employment and women in the labor force) and five policy variables (population change, retirement transfers, income maintenance transfers, unemployment transfers and county government expenditures) (Figure 11).

Important differences were found in how county structural endowments and selected social and economic policies related to the distribution of income in each census year. In 1960, policy variables were most influential in determining the distribution of income. An important transition occurred during the 1960s that shifted the influence of structural and policy variables on income inequality. In 1970, both structural and policy variables were found to be significant in explaining county-level variations in Gini-ratios. By 1980, structural variables were slightly more important predictors of income distribution than were policy variables.

These findings pose several noteworthy implications for policymakers, planners and development specialists. First, social and economic policies deserve continued attention due to their various impacts. For example, retirement benefits were found to be significant determinants of income distribution in all three periods studied. As the proportion of elderly continues to rise in rural America, greater attention needs to be focused on the impact the elderly will have on the economy of agricultural counties.

Similarly, the redistribution of income via unemployment benefits or various county government expenditures was found to reduce the inequality of income during two of the three periods studied. Recent economic pressures in rural areas have severely strained many rural governments, hampering their ability to aid in the transition of displaced farmers, former business owners and other rural residents. The growing gap between available resources and needs may be reflected in an increasing disparity among incomes. This is illustrated by our finding that income maintenance payments increased in counties where a less equal distribution of income existed.

Second, the growing importance of residential and county structural endowments on income distribution indicates that current economic and demographic changes in rural America may create serious economic consequences. For example, the shifting residential composition of agricultural counties due to out-migration may sharply alter the distribution of income as the younger, highly educated residents and their families leave. A lower proportion of educated residents intensified the disparity of income in all study periods analyzed.

Third, structural characteristics of the county also were found to be important determinants of income distribution. For example, growth in the manufacturing sector appeared to be effective in facilitating income equality in two of the three periods investigated. However, these structural changes are not without consequence. Rural manufacturing is not noted for high wages, and therefore, this industry may underutilize the skills of residents.

Finally, the number of commercial farms as a percentage of all farms was also significantly related to income distribution during two of the three periods analyzed. Farm legislation resulting in farm program payments has been particularly beneficial to operators of large, commercial farms. The effect of these programs on local, rural economies merits additional future research.

CHAPTER EIGHT

RESEARCH NEEDS

This analysis of county-level distribution of personal income has suggested some important continuing research issues. These issues are classified into two areas: conceptual problems and measurement problems. Conceptual problems arise due to the diversity of theories (and hypotheses) that have been developed as plausible explanations for observed distributions of income and wealth, and changes in those distributions over time. This lack of a unified theory of personal distribution of income is both desirable and a reason for concern. It is desirable because there are undoubtedly many determinants of income and, therefore, many determinants of the distribution of income. These diverse factors add to the range of policy questions that can be addressed by research on income distribution effects. This paper has selectively reviewed those theories and hypotheses.

The lack of a unified theory is disconcerting for those who would like unequivocal answers about the distributional impacts of policy actions. A second reason for concern relates to the empirical models researchers might formulate to evaluate the trade-offs between alternative policies. Income distribution models are typically qualitative indicators of impacts. Yet, alternative models may produce conflicting assessments of the same set of policy actions because of how determinants are chosen for a particular model.

The second conceptual problem relates to level of analysis. Previous empirical work has been done on the impacts of macroeconomic factors on income distribution, and on the effects of microeconomic distributions on distribution of income. This latter approach necessarily expands the number and range of factors that need to be considered to include various demographic and socioeconomic determinants. The important conceptual research issues here are: (1) the recognition that income distribution is a process and, therefore, has other distributions (for which data is often lacking) as its determinants; and (2) the need to consider that income distributions are the result of several cumulative and dynamic forces.

Empirical models have a great deal of difficulty, for example, in capturing the effects of changing distributions of population age and education due to migration and social investments, and of changes in the distribution of ownership of productive resources (such as land) along with its changing use. This study focused on county-level units of observation on the distribution of income. Other studies have selected state-level units due to the greater availability of data on distributions of explanatory variables. The county level would appear to be an appropriate unit for analysis of microdistributional impacts of policy variables, but additional work needs to be focused on the development of consistent micro-level models and data. This study illustrates some of the potentials (and shortcomings) of our current ability to analyze policy impacts at the county level.

Measurement problems arise in conjunction with conceptualization of the income distribution process, but they relate more to empirical estimation than to the question of what determinants to consider. The measurement issue can be divided into problems with measuring income, and problems with measuring income distribution. This study (and earlier ones) used census money income as the income metric. There are several problems with using money income if the intent is to capture changes in the economic positions of recipients. Changes in nonmoney, wealth positions are not measured. A second problem with measured money income is that it reflects both transitory income variations and the level of long-run (or equilibrium) income expectation of recipients. It is this latter income measure that is of greatest concern when evaluating the impacts of socioeconomic policies in cross-sectional models. To capture long-run income it is necessary to estimate that component directly with the use of an income-generating function (process), as demonstrated by Gardner (1969). Unfortunately, data required by such a function are not readily available for a county-level analysis. This is an area for future research work.

The second general problem with measuring income is selection of the appropriate recipient unit. The choice is among family units, family and household units, and individuals. Families and households are different units due to the category of unrelated individuals, which is included in the census household data series. A more fundamental difference occurs when comparing income data for family/household units with income data expressed on an individual (per capita) basis. Several analysts have rejected use of family and household income data in favor of analyzing time series and panel income data for individuals. The reasons are that analysis of individual income eliminates the problem of variations in family size, number of workers employed per family, and similar issues. Since census data are for family and household units, future research on county-level income distribution needs to include factors such as family size and number of workers when formulating an appropriate policy analysis model of long-run income distribution.

The problem of measuring income distribution is significant for future empirical research, since the size distribution of income can be characterized by the use of several statistical tools. A majority of past work (including this study) has used the Gini-ratio of income concentration. However, the Gini-ratio *interprets* all shifts in income distribution as equally important. For example, a dollar-amount transfer between income classes above the mean income has the same impact on the Gini-ratio as the same dollar-amount transfer between income classes below the mean. Other measures (such as the variance of the l of income) are more sensitive to these different transfer effects.

Second, the Gini-ratio is a single-parameter measure of income distribution. Several analysts have recognized the need to characterize the changing shape of the size distribution as well as shifts in the position of the distribution, and have imposed analytical distributions (gamma, beta) on income data. These parametric approaches to measuring the size distribution of income are promising directions for future research at the county level.

This study and these comments on future research needs suggest the following as a partial research agenda for extension of income distribution analysis at the county level:

1. Further development and refinement of the hypothesis concerning "structural" (resource endowment) determinants, and their interaction with selected "policy" (social and economic) variables. This development needs to consider the dynamic and cumulative nature of the distribution process.
2. Development of an appropriate methodology for extracting the long-run component of income from census money income data for distribution analysis.
3. Application of parametric approaches to characterizing the microdistribution of long-run income with several moments that can be analyzed either individually, or jointly, as functions of the identified determinants.

APPENDIX A:

LIST OF COUNTIES IN STUDY

ILLINOIS (29/102)[*]: Alexander, Bond, Brown, Bureau, Calhoun, Christian, Cumberland, DeWitt, Douglas, Edgar, Ford, Hancock, Henderson, Iroquois, Jersey, Livingston, Marshall, Mason, Mercer, Moultrie, Piatt, Pike, Pulaski, Schuyler, Scott, Shelby, Stark, Warren, Washington.

INDIANA (12/92): Benton, Carroll, Clinton, Franklin, Newton, Parke, Pulaski, Switzerland, Tipton, Union, Warren, White.

IOWA (54/99): Adair, Adams, Audubon, Benton, Buchanan, Buena Vista, Butler, Cedar, Cherokee, Clayton, Crawford, Davis, Delaware, Emmet, Fayette, Franklin, Fremont, Greene, Grundy, Guthrie, Hamilton, Hancock, Harrison, Howard, Humboldt, Ida, Jones, Keokuk, Kossuth, Louisa, Lyon, Madison, Mahaska, Marshall, Mills, Mitchell, Monona, Montgomery, O'Brien, Osceola, Palo Alto, Plymouth, Pocahontas, Ringgold, Sac, Shelby, Tama, Taylor, Van Buren, Washington, Wayne, Winneshiek, Worth, Wright.

KANSAS (39/105): Brown, Clark, Decatur, Doniphan, Finney, Ford, Gove, Grant, Greeley, Hamilton, Harper, Haskell, Jewell, Kingman, Kiowa, Lane, Lincoln, Marshall, Meade, Mitchell, Morris, Morton, Nemaha, Osborne, Ottawa, Pratt, Republic, Rush, Scott, Sheridan, Smith, Stafford, Stanton, Stevens, Thomas, Wabaunsee, Washington, Witchita.

KENTUCKY (33/120): Adair, Bath, Bracken, Breckenridge, Butler, Carlisle, Casey, Cumberland, Edmonson, Fleming, Garrard, Green, Hart, Henry, Hickman, Jackson, Larue, Lewis, Lincoln, Logan, Metcalfe, Monroe, Nicholas, Owen, Owsley, Robertson, Rockcastle, Shelby, Spencer, Todd, Trigg, Trimble, Washington.

[*]The first number in brackets represents the number of agriculture-dependent counties in the state. The second number represents the total number of counties in the state.

MICHIGAN (2/83): Huron, Missaukee.

MINNESOTA (34/87)[b]: Big Stone, Chippewa, Cottonwood, Dodge, Fairbault, Fillmore, Goodhue, Grant, Houston, Jackson, Kittson, Lac qui Par, Lincoln, Lyon, Marshall, Martin, Murray, Meeker, Nobles, Norman, Pipestone, Polk, Pope, Red Lake, Redwood, Renville, Rock, Roseau, Sibley, Stevens, Swift, Traverse, Waseca, Watonwan.

MISSOURI (32/115)[c]: Atchison, Caldwell, Carroll, Chariton, Clark, Clinton, Daviess, De Kalb, Gentry, Harrison, Hickory, Holt, Howard, Knox, Lafayette, Lewis, Lincoln, Linn, Mercer, Mississippi, Monroe, Nodaway, Ozark, Pike, Putnam, Ralls, Saline, Schuyler, Scotland, Shelby, Sullivan, Worth.

NEBRASKA (64/93)[d]: Antelope, Banner, Blaine, Boone, Boyd, Brown, Burt, Butler, Cass, Cedar, Chase, Cherry, Cheyenne, Clay, Cuming, Custer, Deuel, Dixon, Douglas, Dundy, Fillmore, Franklin, Frontier, Furnas, Garden, Gosper, Grant, Greeley, Hamilton, Harlan, Hayes, Hitchcock, Holt, Howard, Johnson, Kearney, Keya Paha, Kimball, Knox, Logan, McPherson, Morrill, Nance, Nemaha, Nuckolls, Pawnee, Perkins, Pierce, Polk, Richardson, Rock, Saunders, Sheridan, Sherman, Sioux, Stanton, Thayer, Thurston, Valley, Washington, Wayne, Webster, Wheeler, York.

NORTH DAKOTA (43/53): Benson, Billings, Bottineau, Burke, Burleigh, Cavalier, Dickey, Divide, Dunn, Eddy, Emmons, Foster, Golden Valley, Grant, Griggs, Hettinger, Kidder, La Moure, Logan, McHenry, McIntosh, McKenzie, McLean, Mercer, Morton, Mountrail, Nelson, Oliver, Pembina, Ramsey, Ransom, Renville, Richland, Sargent, Sheridan, Sioux, Slope, Steele, Towner, Traill, Walsh, Wells.

OHIO (1/88): Paulding.

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[b]Cook, Lake and Ramsey counties did not list rural farm data in 1960 and were thus dropped as agriculture-dependent counties.

[c]Missouri county did not list rural farm data in 1960 and 1970 and was thus dropped as an agriculture-dependent county.

[d]Arthur and Hooker counties did not list rural farm data in 1960 and 1970 and were thus dropped as agriculture-dependent counties.

SOUTH DAKOTA (41/66)[e]: Aurora, Bon Homme, Brule, Buffalo, Campbell, Charles Mix, Clark, Corson, Day, Deuel, Douglas, Edmunds, Faulk, Gregory, Haakon, Hamlin, Hand, Hanson, Harding, Hutchinson, Hyde, Jerauld, Kingsbury, Lincoln, Lyman, Marshall, McCook, McPherson, Mellette, Miner, Minnehaha, Potter, Roberts, Sanborn, Spink, Sully, Todd, Tripp, Turner, Union, Ziebach.

WISCONSIN (13/72)[f]: Buffalo, Clark, Crawford, Dunn, Grant, Iowa, Lafayette, Marquette, Pepin, Richland, Trempealeau, Vernon, Waushara.

[e]Jackson county was eliminated from the data set even though it was an agriculture-dependent county. It combined with Washabaugh county in the 1970s.

[f]Shawano county was eliminated from the data set even though it was an agriculture-dependent county. Menominee county was created out of Shawno and Oconto counties in the 1960s.

GINI-RATIOS AND RELATED DATA

Appendix Table B.1. Gini-ratios for Income Distribution in Agriculture-dependent Counties of the North Central Region, 1960, 1970 and 1980.

State	County	Gini60	Gini70	Gini80
Illinois	Alexander	0.4094	0.5651	0.4631
	Bond	0.3948	0.4835	0.4227
	Brown	0 4312	0.4498	0.4232
	Bureau	0.4326	0.3917	0.3689
	Calhoun	0.4003	0.3958	0.4141
	Christian	0.3946	0.3775	0.3796
	Cumberland	0.3974	0.3777	0.3837
	De Witt	0.3933	0.3756	0.3693
	Douglas	0.3879	0.3716	0.3647
	Edgar	0.3834	0.3718	0.4128
	Ford	0.3827	0.3722	0.3658
	Hancock	0.3833	0.3691	0.3875
	Hendersen	0.3847	0.3706	0.3910
	Iroquois	0.3816	0.3709	0.3716
	Jersey	0.3805	0.3639	0.3588
	Livingston	0.3775	0.3618	0.3500
	Marshall	0.3735	0.3623	0.3768
	Mason	0.3765	0.3635	0.3835
	Mercer	0.3793	0.3616	0.3687
	Moulirie	0.3775	0.3606	0.3707
	Piatt	0.3765	0.3600	0.3463
	Pike	0.3752	0.3588	0.4116

Appendix Table B.1 cont.				
State	**County**	**Gini60**	**Gini70**	**Gini80**
Illinois cont.	Pulaski	0.3774	0.3631	0.4492
	Schuyler	0.3816	0.3628	0.4069
	Scott	0.3797	0.3643	0.4350
	Shelby	0.3823	0.3635	0.3765
	Stark	0.3812	0.3645	0.3997
	Warren	0.3813	0.3637	0.3843
	Washington	0.3793	0.3644	0.3785
Indiana	Benton	0.4733	0.4791	0.3650
	Carroll	0.4276	0.3891	0.3491
	Clinton	0.3767	0.3624	0.3662
	Franklin	0.3726	0.3578	0.3831
	Newton	0.3752	0.3511	0.3582
	Parke	0.3873	0.3525	0.3881
	Pulaski	0.3688	0.3554	0.3921
	Switzerland	0.3752	0.3557	0.4188
	Tipton	0.3721	0.3556	0.3698
	Union	0.3749	0.3553	0.4328
	Warren	0.3768	0.3517	0.3941
	White	0.3742	0.3514	0.3597
Iowa	Adair	0.3618	0.4978	0.4307
	Adams	0.3897	0.4637	0.4308
	Audubon	0.4179	0.4467	0.3934
	Benton	0.4424	0.4129	0.3772
	Buchanan	0.3987	0.3949	0.3848
	Buena Vista	0.4036	0.3986	0.3892
	Butler	0.3970	0.3928	0.3848
	Cedar	0.4030	0.3919	0.3725
	Cherokee	0.4034	0.3838	0.3928
	Clayton	0.3990	0.3874	0.4071
	Crawford	0.4003	0.3844	0.3856
	Davis	0.4058	0.3834	0.4327
	Delaware	0.4070	0.3861	0.3794
	Emmet	0.4011	0.3863	0.3812

Appendix Table B.1 cont.				
State	**County**	**Gini60**	**Gini70**	**Gini80**
Iowa cont.	Fayette	0.3990	0.3865	0.3919
	Franklin	0.3980	0.3834	0.3928
	Fremont	0.4049	0.3838	0.4281
	Greene	0.4027	0.3846	0.4025
	Grundy	0.4007	0.3828	0.3620
	Guthrie	0.4009	0.3799	0.4106
	Hamilton	0.3994	0.3791	0.3804
	Hancock	0.3997	0.3806	0.3746
	Harrison	0.3995	0.3796	0.4156
	Howard	0.3995	0.3794	0.4215
	Humboldt	0.3973	0.3797	0.3904
	Ida	0.4014	0.3799	0.3975
	Jones	0.4009	0.3801	0.3730
	Keokuk	0.3997	0.3793	0.3923
	Kossuth	0.3977	0.3797	0.3936
	Louisa	0.3984	0.3791	0.3739
	Lyon	0.3985	0.3788	0.4150
	Madison	0.3987	0.3768	0.4004
	Mahaska	0.3977	0.3798	0.3886
	Marshall	0.3958	0.3785	0.3626
	Mills	0.3963	0.3767	0.3740
	Mitchell	0.3955	0.3768	0.4222
	Monona	0.3965	0.3771	0.4097
	Montgomery	0.3959	0.3781	0.3871
	O'Brien	0.3947	0.3773	0.3992
	Osceola	0.3971	0.3774	0.3843
	Palo Alto	0.3968	0.3782	0.4088
	Plymouth	0.3959	0.3769	0.3949
	Pocahontas	0.3954	0.3774	0.4042
	Ringgold	0.3977	0.3771	0.4549
	Sac	0.3975	0.3780	0.3888
	Shelby	0.3984	0.3779	0.3762
	Tama	0.3961	0.3758	0.3847

Appendix Table B.1 cont.				
State	**County**	**Gini60**	**Gini70**	**Gini80**
Iowa cont.	Taylor	0.3988	0.3774	0.4485
	Van Buren	0.3978	0.3775	0.4507
	Washington	0.3982	0.3779	0.3905
	Wayne	0.3990	0.3773	0.4325
	Winneshiek	0.3978	0.3783	0.4076
	Worth	0.3990	0.3791	0.3792
	Wright	0.3969	0.3812	0.3854
Kansas	Brown	0.4446	0.5050	0.4014
	Clark	0.3639	0.4626	0.4833
	Decatur	0.3449	0.4381	0.4396
	Doniphan	0.4108	0.4198	0.3783
	Finney	0.3856	0.4117	0.3533
	Ford	0.3861	0.3900	0.3862
	Gove	0.3876	0.3895	0.4909
	Grant	0.3913	0.3897	0.3683
	Gray	0.3745	0.3907	0.4279
	Greeley	0.3737	0.3884	0.4821
	Hamilton	0.3791	0.3880	0.4651
	Harper	0.3737	0.3862	0.4218
	Haskell	0.3766	0.3902	0.4518
	Jewell	0.3761	0.3845	0.4506
	Kingman	0.3858	0.3831	0.4128
	Kiowa	0.3850	0.3826	0.4800
	Lane	0.3756	0.3844	0.4222
	Lincoln	0.3807	0.3864	0.4584
	Marshall	0.3746	0.3885	0.4124
	Meade	0.3719	0.3919	0.3984
	Mitchell	0.3796	0.3928	0.4009
	Morris	0.3794	0.3950	0.4169
	Morton	0.3716	0.3902	0.4653
	Nemaha	0.3856	0.3927	0.4446
	Osborne	0.3834	0.3934	0.3980
	Ottawa	0.3829	0.3956	0.4102

Appendix Table B.1 cont.				
State	**County**	**Gini60**	**Gini70**	**Gini80**
Kansas cont.	Pratt	0.3771	0.3915	0.3880
	Republic	0.3828	0.3931	0.4278
	Rush	0.3771	0.3953	0.4438
	Scott	0.3770	0.3958	0.4123
	Sheridan	0.3775	0.3897	0.4721
	Smith	0.3824	0.3918	0.3958
	Stafford	0.3789	0.3916	0.4316
	Stanton	0.3796	0.3931	0.4965
	Stevens	0.3796	0.3921	0.4177
	Thomas	0.3807	0.3906	0.4288
	Wabaunsee	0.3850	0.3913	0.3842
	Washington	0.3856	0.3912	0.4421
	Wichita	0.3874	0.3918	0.4805
Kentucky	Adair	0.5129	0.5409	0.4396
	Bath	0.4374	0.4310	0.4270
	Bracken	0.4572	0.4546	0.4264
	Breckinridge	0.4017	0.4376	0.4335
	Butler	0.4050	0.4255	0.4283
	Carlisle	0.4281	0.4197	0.4411
	Casey	0.4340	0.4290	0.4437
	Cumberland	0.4459	0.4331	0.4530
	Edmonson	0.4444	0.4264	0.3975
	Fleming	0.4486	0.4305	0.4342
	Garrard	0.4413	0.4309	0.4145
	Green	0.4415	0.4265	0.4458
	Hart	0.4544	0.4258	0.4472
	Henry	0.4482	0.4176	0.4148
	Hickman	0.4533	0.4240	0.4536
	Jackson	0.4600	0.4255	0.4580
	Larue	0.4541	0.4281	0.4156
	Lewis	0.4566	0.4264	0.4250
	Lincoln	0.4487	0.4226	0.4230
	Logan	0.4590	0.4278	0.4000

Appendix Table B.1 cont.				
State	**County**	**Gini 60**	**Gini 70**	**Gini 80**
Kentucky cont.	Metcalfe	0.4515	0.4325	0.4564
	Monroe	0.4576	0.4318	0.4587
	Nicholas	0.4618	0.4313	0.4379
	Owen	0.4593	0.4284	0.4174
	Owsley	0.4609	0.4296	0.4385
	Robertson	0.4061	0.4311	0.4685
	Rockcastle	0.4606	0.4311	0.4499
	Shelby	0.4625	0.4329	0.3893
	Spencer	0.4618	0.4317	0.4189
	Todd	0.4570	0.4317	0.4390
	Trigg	0.4551	0.4310	0.4282
	Trimble	0.4564	0.4309	0.4307
	Washington	0.4551	0.4292	0.4585
Michigan	Huron	0.4552	0.4312	0.3900
	Missaukee	0.4329	0.4106	0.3876
Minnesota	Big Stone	0.4201	0.3978	0.4015
	Chippewa	0.3215	0.5363	0.3972
	Cottonwood	0.3356	0.4058	0.3991
	Dodge	0.4118	0.4325	0.3782
	Faribault	0.4105	0.4133	0.3967
	Fillmore	0.3905	0.3973	0.4061
	Goodhue	0.3981	0.3994	0.3735
	Grant	0.3783	0.3852	0.4215
	Houston	0.3914	0.3852	0.3869
	Jackson	0.3900	0.3832	0.3940
	Kittson	0.3983	0.3867	0.4068
	Lac qui Parle	0.3912	0.3857	0.4140
	Lincoln	0.3913	0.3844	0.4568
	Lyon	0.3915	0.3847	0.3956
	Marshall	0.3924	0.3843	0.4133
	Martin	0.3917	0.3828	0.3866
	Meeker	0.3898	0.3835	0.3990
	Murray	0.3905	0.3849	0.4144

Appendix Table B.1 cont.				
State	County	Gini60	Gini70	Gini80
Minnesota cont.	Nobles	0.3934	0.3830	0.3979
	Norman	0.3864	0.3831	0.4302
	Pikestone	0.3867	0.3859	0.4279
	Polk	0.3887	0.3851	0.3952
	Pope	0.3897	0.3845	0.4219
	Red Lake	0.3889	0.3856	0.4140
	Redwood	0.3892	0.3861	0.3992
	Renville	0.3842	0.3857	0.3867
	Rock	0.3889	0.3871	0.3912
	Rosseau	0.3875	0.3865	0.3931
	Sibley	0.3891	0.3848	0.3904
	Stevens	0.3884	0.3854	0.4256
	Swift	0.3899	0.3880	0.4223
	Traverse	0.3891	0.3880	0.4605
	Waseca	0.3896	0.3883	0.3738
	Watonwan	0.3900	0.3868	0.3927
Missouri	Atchison	0.3899	0.3866	0.4002
	Caldwell	0.3106	0.5236	0.4472
	Carroll	0.3246	0.4310	0.4351
	Chariton	0.4250	0.4153	0.4390
	Clark	0.4378	0.4088	0.4431
	Clinton	0.4217	0.4056	0.3767
	Daviess	0.4132	0.4036	0.4357
	De Kalb	0.4191	0.4043	0.4209
	Gentry	0.4167	0.3935	0.4292
	Harrison	0.4253	0.3992	0.4574
	Hickory	0.4293	0.3999	0.4352
	Holt	0.4226	0.4131	0.4445
	Howard	0.4234	0.4038	0.4461
	Knox	0.4212	0.4048	0.4707
	Lafayette	0.4288	0.4097	0.3853
	Lewis	0.4295	0.3962	0.3930
	Lincoln	0.4273	0.3944	0.3815

Appendix Table B.1 cont.				
State	**County**	**Gini60**	**Gini70**	**Gini80**
Missouri cont.	Linn	0.4191	0.3956	0.4303
	Mercer	0.4205	0.3919	0.4107
	Mississippi	0.4173	0.3930	0.4475
	Monroe	0.4217	0.3975	0.4069
	Nodaway	0.4261	0.3962	0.4137
	Ozark	0.4197	0.3974	0.4345
	Pike	0.4247	0.3984	0.4181
	Putnam	0.4236	0.3984	0.4193
	Ralls	0.4306	0.4009	0.3804
	Saline	0.4198	0.3983	0.3984
	Schuyler	0.4225	0.4000	0.4397
	Scotland	0.4173	0.4020	0.4344
	Shelby	0.4187	0.4038	0.4126
	Sullivan	0.4216	0.4014	0.4649
	Worth	0.4187	0.4039	0.4970
Nebraska	Antelope	0.3842	0.3939	0.4388
	Banner	0.3771	0.5579	0.3800
	Blaine	0.3539	0.5630	0.4110
	Boone	0.3176	0.4906	0.4406
	Boyd	0.4053	0.4667	0.4185
	Brown	0.3777	0.4709	0.4381
	Burt	0.4403	0.4290	0.4006
	Butler	0.3458	0.4442	0.4006
	Cass	0.4066	0.4241	0.3444
	Cedar	0.3894	0.4399	0.4230
	Chase	0.3933	0.4061	0.4096
	Cherry	0.3864	0.4138	0.3912
	Cheyenne	0.3864	0.4105	0.3970
	Clay	0.3901	0.4021	0.3873
	Cuming	0.3916	0.3942	0.3834
	Custer	0.3849	0.4055	0.4154
	Deuel	0.3936	0.3964	0.3823
	Dixon	0.3925	0.3997	0.4163

Appendix Table B.1 cont.				
State	**County**	**Gini60**	**Gini70**	**Gini80**
Nebraska cont.	Douglas	0.3913	0.4021	0.3662
	Dundy	0.3888	0.3958	0.4197
	Fillmore	0.3640	0.3604	0.3810
	Franklin	0.3629	0.3610	0.4145
	Frontier	0.3639	0.3606	0.4057
	Furnas	0.3667	0.3627	0.4131
	Garden	0.3649	0.3627	0.3838
	Gosper	0.3678	0.3625	0.3961
	Grant	0.3670	0.3639	0.3858
	Greeley	0.3672	0.3645	0.4503
	Hamilton	0.3666	0.3646	0.3565
	Harlan	0.3680	0.3658	0.4210
	Hayes	0.3686	0.3663	0.4136
	Hitchcock	0.3689	0.3665	0.3905
	Holt	0.3678	0.3669	0.4033
	Howard	0.3686	0.3681	0.3870
	Johnson	0.3714	0.3681	0.4105
	Kearney	0.3739	0.3681	0.3714
	Keya Paha	0.3741	0.3687	0.4275
	Kimball	0.3745	0.3696	0.3770
	Knox	0.3753	0.3699	0.4251
	Logan	0.3724	0.3686	0.4219
	McPherson	0.3748	0.3712	0.4058
	Morrill	0.3741	0.3717	0.4229
	Nance	0.3745	0.3720	0.4117
	Nemaha	0.3743	0.3706	0.3996
	Nuckolls	0.3756	0.3710	0.3833
	Pawnee	0.3756	0.3726	0.4201
	Perkins	0.3770	0.3718	0.4018
	Pierce	0.3764	0.3715	0.3840
	Polk	0.3780	0.3719	0.3920
	Richardson	0.3796	0.3732	0.4105
	Rock	0.3787	0.3727	0.3880

Appendix Table B.1 cont.				
State	**County**	**Gini60**	**Gini70**	**Gini80**
Nebraska cont.	Saunders	0.3776	0.3729	0.3672
	Sheridan	0.3794	0.3735	0.4204
	Sherman	0.3792	0.3739	0.3953
	Sioux	0.3799	0.3739	0.3948
	Stanton	0.3812	0.3753	0.3777
	Thayer	0.3817	0.3754	0.3907
	Thurston	0.3811	0.3756	0.4087
	Valley	0.3814	0.3754	0.4150
	Washington	0.3814	0.3754	0.3533
	Wayne	0.3827	0.3766	0.3915
	Webster	0.3829	0.3756	0.4241
	Wheeler	0.3825	0.3760	0.3767
	York	0.3819	0.3761	0.3746
North Dakota	Benson	0.4170	0.4038	0.3990
	Billings	0.4559	0.4988	0.5442
	Bottineau	0.4778	0.5216	0.3971
	Burke	0.3448	0.4683	0.3964
	Burleigh	0.3459	0.4046	0.3534
	Cavalier	0.3633	0.3931	0.4048
	Dickey	0.3823	0.3857	0.4403
	Divide	0.3895	0.3938	0.4253
	Dunn	0.3796	0.3978	0.4248
	Eddy	0.3852	0.3955	0.4609
	Emmons	0.3827	0.3869	0.4406
	Foster	0.3867	0.4071	0.4329
	Golden Valley	0.3877	0.4006	0.5440
	Grant	0.3896	0.4040	0.4189
	Griggs	0.3809	0.4058	0.4768
	Hettinger	0.3844	0.4010	0.4258
	Kidder	0.3854	0.3981	0.4525
	La Moure	0.3842	0.4071	0.3830
	Logan	0.3784	0.4056	0.4500
	McHenry	0.3888	0.4083	0.4496

Appendix Table B.1 cont.				
State	**County**	**Gini60**	**Gini70**	**Gini80**
North Dakota cont.	McIntosh	0.3901	0.4088	0.4460
	McKenzie	0.3920	0.4160	0.4234
	McLean	0.3924	0.4112	0.3952
	Mercer	0.3852	0.4068	0.3928
	Morton	0.3915	0.4105	0.3753
	Mountrail	0.3919	0.4015	0.4075
	Nelson	0.3814	0.4019	0.4248
	Oliver	0.3874	0.4021	0.4805
	Pembina	0.3904	0.4025	0.3889
	Pierce	0.3852	0.4010	0.4577
	Ramsey	0.3871	0.3992	0.3879
	Ransom	0.3892	0.4035	0.4290
	Renville	0.3862	0.4003	0.4201
	Richland	0.3791	0.3986	0.3888
	Sargent	0.3834	0.4002	0.3924
	Sheridan	0.3832	0.3979	0.4965
	Sioux	0.3856	0.3991	0.5556
	Slope	0.3852	0.3973	0.5630
	Steele	0.3850	0.3976	0.4932
	Towner	0.3875	0.3966	0.4930
	Traill	0.3850	0.4015	0.3940
	Walsh	0.3818	0.3969	0.4059
	Wells	0.3854	0.3976	0.4259
Ohio	Paulding	0.3826	0.3766	0.3368
South Dakota	Aurora	0.3827	0.3761	0.3828
	Bon Homme	0.4143	0.3916	0.4292
	Brule	0.4521	0.7483	0.3737
	Buffalo	0.4152	0.4634	0.3250
	Campbell	0.4120	0.4519	0.5549
	Charles Mix	0.4073	0.4752	0.4170
	Clark	0.4146	0.4751	0.4358
	Carson	0.4353	0.4924	0.5070
	Day	0.4257	0.4548	0.4065

Appendix Table B.1 cont.				
State	County	Gini60	Gini70	Gini80
South Dakota cont.	Deuel	0.4487	0.4553	0.4411
	Douglas	0.4121	0.4408	0.3665
	Edmonds	0.4105	0.4518	0.4056
	Faulk	0.4050	0.4579	0.4978
	Gregory	0.4245	0.4413	0.4831
	Haakon	0.4033	0.4515	0.4540
	Hamlin	0.4146	0.4463	0.4348
	Hand	0.4284	0.4428	0.4458
	Hanson	0.4228	0.4307	0.5147
	Harding	0.4308	0.4409	0.5547
	Hutchinson	0.4238	0.4427	0.4394
	Hyde	0.4126	0.4445	0.5021
	Jerauld	0.4271	0.4485	0.5031
	Kingsbury	0.4252	0.4487	0.4038
	Lincoln	0.4224	0.4461	0.4012
	Lyman	0.4222	0.4376	0.4995
	McCook	0 4253	0.4356	0.3924
	McPherson	0.4252	0.4316	0.3996
	Marshall	0.4160	0.4317	0.4321
	Mellette	0.4179	0.4300	0.6534
	Miner	0.4223	0.4325	0.3985
	Minnehaha	0.4182	0.4349	0.3586
	Potter	0.4189	0.4274	0.4725
	Roberts	0.4130	0.4018	0.4220
	Sanborn	0.4111	0.4027	0.5129
	Spink	0.4074	0.4018	0.4478
	Sully	0.4099	0.4039	0.5631
	Todd	0.4110	0.4001	0.4308
	Tripp	0.4096	0.4023	0.4431
	Turner	0.4148	0.4050	0.4260
	Union	0.4132	0.4045	0.3910
	Ziebach	0.4118	0.4067	0.6179
Wisconsin	Buffalo	0.4095	0.4060	0.4122

Appendix Table B.1 cont.				
State	County	Gini60	Gini70	Gini80
Wisconsin cont.	Clark	0.4080	0.4055	0.4116
	Crawford	0.3747	0.4486	0.4072
	Dunn	0.3781	0.4025	0.3829
	Grant	0.3962	0.3999	0.3885
	Iowa	0.3929	0.3820	0.3845
	Lafayette	0.3956	0.3864	0.3773
	Marquette	0.3981	0.3820	0.4213
	Pepin	0.3963	0.3796	0.3719
	Richland	0.4032	0.3820	0.3960
	Trempealeau	0.3945	0.3861	0.3876
	Vernon	0.3941	0.3830	0.4133
	Waushara	0.3979	0.3847	0.3970

Appendix Table B.2. Correlation Coefficient Matrix for Income Distribution (Gini-ratio) and Predictor Variables, North Central Region, 1960.

	GINI60	PHS60	LGFARM	PMANEMP6	PSEREMP6
GINI60	--	-.512***	-.320***	.169***	-.142**
PHS60		--	.455***	-.139**	.321***
LGFARM			--	-.050	.112
PMANEMP6				--	.075
PSEREMP6					--
PWOMLF6					
PCPOP56					
PCRETIR6					
PCMAIN6					
PCUNEM6					
PCGOVX6					

* p≤ .05 N = 397
** p≤ .01
*** p≤ .001

Appendix Table B.3. Correlation Coefficient Matrix for Income Distribution (Gini-ratio) and Predictor Variables, North Central Region, 1970.

	GINI70	PHS70	LGFARM	PMANEMP7	PSEREMP7
GINI70	--	-.310***	-.257***	-.155**	-.124**
PHS70		--	.456***	-.247***	.156**
LGFARM			--	-.096	.069
PMANEMP7				--	.100*
PSEREMP7					--
PWOMLF7					
PCPOP67					
PCRETIR7					
PCMAIN7					
PCUNEM7					
PCGOVX7					

* p≤ .05 N = 397
** p≤ .01
*** p≤ .001

Appendix Table B.2 cont.

PWOMLF6	PCPOP56	PCRETIR6	PCMAIN6	PCUNEM6	PCGOVX6
-.048	-.101*	-.162***	.319***	.142**	-.521***
.217***	.310***	.251***	-.361***	-.323***	.558***
.067	.199***	-.042	-.385***	-.164***	.324***
.409***	.336***	.298***	.047	.460**	-.211***
.438***	.411***	.080	-.085	.069	.183***
—	.267***	.381***	.081	.203***	.027
	—	-.079	-.375***	.079	.175***
		—	.208***	.158**	.039
			—	.219**	-.354***
				—	-.138**
					—

Appendix Table B.3 cont.

PWOMLF7	PCPOP67	PCRETIR7	PCMAIN7	PCUNEM7	PCGOVX7
-.180***	-.151**	-.157**	.188***	-.056	-.257***
.152**	.044	.261***	-.471***	-.436***	.547***
.059	.070	-.046	-.334***	-.204***	.376***
.490***	.506***	-.020	.184***	.532***	-.267***
.459***	.110	.250	.127**	.096*	.033
—	.399***	.273***	.165***	.271***	.056
	—	-.288***	-.032	.269***	-.060
		—	.061	-.004	.143**
			—	.380***	-.381***
				—	-.251***
					—

Appendix Table B.4.	Correlation Coefficient Matrix for Income Distribution (Gini-ratio) and Predictor Variables, North Central Region, 1980.				
	GINI80	PHS80	LGFARM	PMANEMP8	PSEREMP8
GINI80	--	-.271***	-.279***	-.363***	-.054
PHS80		--	.432***	-.249***	.214***
LGFARM			--	-.069	.079
PMANEMP8				--	-.250***
PSEREMP8					--
PWOMLF8					
PCPOP78					
PCRETIR8					
PCMAIN8					
PCUNEM8					
PCGOVX8					

* $p \le .05$ N = 397

** $p \le .01$

*** $p \le .001$

Appendix Table B.4 cont.

PWOMLF8	PCPOP78	PCRETIR8	PCMAIN8	PCUNEM8	PCGOVX8
-.340***	-.312***	-.007	.256***	-.172***	-.057
.006	.174***	.198***	-.339***	-.426***	.484***
.017	-.113*	-.082	-.365***	-.184***	.324***
.463***	.510***	-.177***	.029	.436***	-.440***
.411***	-.081	.223***	.122**	.016	.210***
--	.302***	.101*	.177***	.256***	-.191***
	--	-.370***	-.047	.390***	-.315***
		--	.353***	-.077	.241***
			--	.186***	-.262***
				--	-.231***
					--

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Appendix Table B.5. Student Enrollments, Expenditures for Education, and Education Expenditures per Student, United States, 1950-1982.						
	Students Enrolled in Public and Private Schools			Public and Private School Expenditures (in 1967 Constant Dollars)		
Year	K-12	Higher Ed.	Total	K-12	Higher Ed.	Total
	---------- thousands ----------			---------- billion dollars ----------		
1982	44,743	12,426	57,169	41.7	26.7	68.4
1980	45,949	12,097	58,046	41.4	25.3	66.7
1978	47,636	11,259	58,895	46.5	25.3	71.8
1976	49,484	9,731	59,215	46.4	25.0	71.4
1974	50,053	8,518	58,571	43.1	23.2	66.3
1972	50,744	7,800	58,544	44.3	23.3	67.6
1970	51,272	7,136	58,408	39.3	21.3	60.6
1968	51,174	6,802	57,976	34.5	18.3	52.8
1966	48,780	5,526	54,306	30.9	15.6	46.5
1964	46,957	4,234	51,191	26.7	12.2	38.9
1962	44,547	3,726	48,273	23.0	9.4	32.4
1960	42,012	3,216	45,228	20.3	7.6	27.9
1958	38,996	3,284	42,280	18.1	5.2	23.3
1956	36,106	2,996	39,102	15.5	4.2	19.7
1954	33,396	2,515	35,911	13.0	3.5	16.5
1952	30,554	2,302	32,856	10.5	2.9	13.4
1950	28,660	2,659	31,319	9.2	3.0	12.2

Appendix Table B.5 cont.

	Expenditures per Student (in 1967 Constant Dollars)		
	K-12	Higher Ed.	Total
	----------	----------	----------
	932	2,149	1,196
	901	2,091	1,144
	976	2,247	1,219
	938	2,569	1,206
	861	2,724	1,113
	873	2,987	1,155
	766	2,985	1,038
	674	2,690	911
	633	2,823	856
	569	2,881	760
	516	2,523	671
	483	2,363	617
	464	1,583	551
	429	1 402	504
	389	1,[illegible]92	460
	344	1,260	408
	321	1,128	390

Appendix Table B.6.	**Number of Farms, Farm Income and Government Payments, by Value of Sales Class, United States, 1960-1982.**

Farm Sales	Selected Variables[a]		Year 1960	1962	1964	1966
$100,000+	Number farms	(K)	23	29	32	43
	Farm income	($ mil)	6,060	7,967	9,014	13,006
	Gov't. payments	($ mil)	30	90	118	336
$40,000-$99,999	Number farms	(K)	90	106	114	143
	Farm income	($ mil)	5,420	6,550	7,108	9,381
	Gov't. payments	($ mil)	77	210	260	569
$20,000-$39,000	Number farms	(K)	227	254	268	304
	Farm income	($ mil)	6,474	7,450	7,954	9,532
	Gov't. payments	($ mil)	111	309	412	712
$10,000-$19,999	Number farms	(K)	497	493	482	445
	Farm income	($ mil)	7,389	7,608	7,604	7,393
	Gov't. payments	($ mil)	159	417	563	709
$5,000-$9,999	Number farms	(K)	660	589	534	476
	Farm income	($ mil)	5,125	4,740	4,359	4,024
	Gov't. payments	($ mil)	144	320	371	403
Less than $5,000	Number farms	(K)	2,466	2,221	2,027	1,846
	Farm income	($ mil)	4,489	4,157	3,804	3,791
	Gov't. payments	($ mil)	181	401	457	548
TOTAL	Number farms	(K)	3,963	3,692	3,457	3,257
	Farm income	($ mil)	34,957	38,472	39,843	47,128
	Gov't. payments	($ mil)	702	1,747	2,181	3,277
$100,000+	Number farms	(%)	0.6	0.8	0.9	1.3
	Farm income	(%)	17.3	20.7	22.6	27.6
	Gov't. payments	(%)	4.3	5.2	5.4	10.3
$40,000-$99,999	Number farms	(%)	2.3	2.9	3.3	4.4
	Farm income	(%)	15.5	17.0	17.8	19.9
	Gov't. payments	(%)	11.0	12.0	11.9	17.4
$10,000-$39,999	Number farms	(%)	18.3	20.2	21.7	23.0
	Farm income	(%)	39.7	39.1	39.0	35.9
	Gov't. payments	(%)	38.5	41.6	44.7	43.4
Less than $10,000	Number farms	(%)	78.9	76.1	74.1	71.3
	Farm income	(%)	27.5	23.1	20.5	16.6
	Gov't. payments	(%)	46.3	41.3	38.0	29.0
Total[b]	Number farms	(%)	100.1	100.0	100.0	100.0
	Farm income	(%)	100.0	99.9	100.0	100.0
	Gov't. payments	(%)	100.1	100.1	100.1	100.0

Source: *Economic Indicators of the Farm Sector: National Financial Sumary, 1985*. National Economics Division, Economic Research Service, U.S. Department of Agriculture. ECIFS 5-2. November 1986. Tables 27, 30 and 31.

[a] Farm income includes cash receipts, net Commodity Credit Corporation Loans, direct government payments, and other farm-related income.

[b] Totals may not sum to 100.0 percent because of rounding.

Appendix Table B.6 cont.

Year							
1968	1970	1972	1974	1976	1978	1980	1982
45 13,994 399	53 18,402 530	79 26,930 759	151 49,581 149	164 53,977 229	212 71,719 1,150	271 97,932 568	324 108,401 1,685
149 9,900 608	165 11,885 708	207 14,976 862	330 22,401 136	324 23,098 231	347 25,492 1,059	354 26,072 414	357 25,123 1,065
306 9,778 770	302 10,515 826	305 10,706 814	330 10,872 100	308 10,063 117	292 9,753 397	281 9,291 146	267 8,275 355
415 7,032 710	362 6,627 671	347 6,371 630	329 5,530 67	309 5,080 60	295 5,025 159	288 4,903 59	278 4,329 146
439 3,802 422	372 3,505 400	353 3,284 373	324 2,718 42	311 2,581 43	316 2,834 136	311 2,779 51	302 2,486 127
1,717 3,671 553	1,695 3,834 582	1,569 3,415 523	1,331 2,624 37	1,081 2,369 53	973 2,460 128	928 2,318 47	873 1,958 114
3,071 48,166 3,462	2,949 54,768 3,717	2,860 65,682 3,961	2,795 93,726 531	2,497 97,168 733	2,436 117,283 3,029	2,433 143,295 1,286	2,401 150,570 3,492
1.5 29.0 11.5	1.8 33.6 14.3	2.8 41.0 19.2	5.4 52.9 28.1	6.6 55.6 31.2	8.7 61.2 38.0	11.1 68.3 44.2	13.5 72.0 48.2
4.8 20.6 17.6	5.6 21.7 19.0	7.2 22.8 21.8	11.8 23.9 25.6	13.0 23.8 31.5	14.2 21.7 35.0	14.6 18.2 32.2	14.9 16.7 30.5
23.5 34.9 42.7	22.5 31.3 40.3	22.8 26.0 36.4	23.6 17.5 31.4	24.7 15.6 24.2	24.1 12.6 18.4	23.4 9.9 15.9	22.7 8.4 14.3
70.2 15.5 28.2	70.1 13.4 26.4	67.2 10.2 22.6	59.2 5.7 14.9	55.7 5.1 13.1	52.9 4.5 8.7	50.9 3.6 7.6	48.9 3.0 6.9
100.0 100.0 100.0	100.0 100.0 100.0	100.0 100.0 100.0	100.0 100.0 100.0	100.0 100.1 100.0	99.9 100.0 100.1	100.0 100.0 99.9	100.0 100.1 99.9

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